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EDWARD AUGUSTUS SAYRE.

A half century ago, in round numbers, the Brooklyn, N. Y., delegation to the convention of the AMERICAN PHARMACEUTICAL ASSOCIATION was larger than usual—a membership drive had added many to the roll and a special party was organized to attend the convention. Perhaps to show the strength, pharmaceutically speaking, of the then independent city across the East River. The date is fixed and symbolized because Edward Augustus Sayre was in the party and the event marked his induction into national pharmaceutical affairs as a member of the A. PH. A.

He was then a young man who had gained a local reputation as a pharmaceutic leader—one who saw that the royal road of progression in his chosen profession was along strong organization lines. He had worked hard and diligently with such men as George H. White, Dr. Edward P. Nichols, Charles H. Dalrymple, James Stratton, James Mercein and a number of others—most of whom are now deceased—in organizing the New Jersey Pharmaceutical Association. This was in 1870 and Mr. Sayre was associated with Israel W. Osborne and Ransford W. Vandervoort in the "old drug store" at 482 Broad Street, Newark, N. J., which he purchased in 1903 after nearly 30 years away from Newark.

He left Newark in the early seventies and became associated with the late William Hegeman at 203 Broadway, New York. At another season, which came shortly, an opportunity loomed and Edward A. Sayre went to Brooklyn, N. Y. First as a clerk for Davies and Leys, who had a store at 203 Fulton Street and a short time afterwards on his own account at Washington and Myrtle Avenues. So Brooklyn and Kings County gained this young leader whose efforts were to be felt in moulding the Kings County Society and its College of Pharmacy—an institution for the training of pharmacists, owned and controlled by pharmacists—into an organization of such strength that after an age of services to the public health and its membership it remains a strong organization—intact and secure.

Along in 1879 when the late Professor P. W. Bedford, who had probably watched the success of the New Jersey society, conceived a state organization for

druggists of New York, Edward A. Sayre was counted in and from the start took an active interest. At this season he held the office of Secretary of the Kings County Society and ascended the President's chair in 1882. He further served this local Brooklyn association as a member of its "unofficial formulary committee" from which grew our present National Formulary.

He had in 1883 been a member of the AMERICAN PHARMACEUTICAL ASSOCIATION between five and ten years and his reputation as an organizer and willing worker for the good of pharmacy grew with this association. His work in organizing the National Retail Druggists Association is of record. He was honored by being elected the first chairman of its executive committee and had served two terms when he was chosen President. This was in 1885. In 1886 he was a member of the joint committee which effected the merger of the N. R. D. A. with the A. PH. A. This merger was the start of the sections within the A. PH. A. and made the ASSOCIATION of increased usefulness to dispensing pharmacists.

In 1887 Mr. Sayre was elected a Vice-President of the New York State Pharmaceutical Association. He, no doubt, would have been elected President of the society had he not left retail pharmacy to join the New York staff of the Seabury Pharmacal Laboratories. After eighteen years with the Seabury concern he resigned his position and purchased the "Old North Ward Drug Store" at 482 Broad Street, Newark, N. J. This was the pharmacy in which Mr. Sayre was employed when he joined the New Jersey association as a charter member in 1870.

No sooner had it become known that Mr. Sayre was again in Newark than he was appointed clerk of the New Jersey College of Pharmacy. This he accepted, resigning a few years later. While he practiced in Newark he took an active interest in its affairs and was almost the perpetual President of the local pharmaceutical society.

He served the New Jersey association as President in 1897 and when the time came for this pioneer of state societies to celebrate its golden jubilee it chose Mr. Sayre as the "jubilee president." Always serving pharmacy and its societies unselfishly, in order to devote the requisite time to the office of President and assure the success of the jubilee celebration, Mr. Sayre disposed of his pharmacy—the second oldest in Newark—and joined the ranks of retired pharmacists. This was October 15, 1919.

Mr. Sayre was born in Newark, N. J., November 25, 1849. During the last half of the War of the Rebellion he served as a hospital nurse with the United States Army.

He retains his membership in the AMERICAN PHARMACEUTICAL ASSOCIATION and its New York Branch. He also holds his membership in the New Jersey Pharmaceutical Association, the New York State Pharmaceutical Association and the New York College of Pharmacy.

About a year ago he suffered a serious illness from which he is slowly recovering. His interests are still chiefly pharmaceutical and he watches with interest from his home in East Orange, N. J., the progress of a younger generation of pharmacists.

EDW. A. WICKHAM

EDITORIAL

E. G. EBERLE, EDITOR 10 West Chase St., BALTIMORE, MD.

THE HEADQUARTERS' BUILDING FUND.

AN AUDIT of the accounts of the Treasurer of the AMERICAN PHARMACEUTICAL ASSOCIATION for the fiscal year 1925 has just been completed, and the detailed report will appear in the next issue of the YEAR BOOK.

The total assets on December 31, 1925, were $263,356.01, exclusive of Trust Funds, as compared with $199,107.60, on December 31, 1924, $112,102.61 on December 31, 1923, and $102,447.50 on December 31, 1922. The Trust Funds totaled $13,915.35 on December 31, 1925, $13,436.69 on December 31, 1924, $12,903.38 on December 31, 1923, and $12,337.78 on December 31, 1922.

The balance to the credit of the Headquarters' Building Fund on December 31, 1925, was $174,274.63, representing the total received by the Treasurer up to that date, from contributors, less $66.10, the amount of unpaid checks. The total net subscriptions for which cards had been received and tabulated on December 31, 1925, were $490,297.68, as all cancellations are promptly deducted. The audit of the subscriptions, made as of July 31, 1925, showed the total of subscriptions in arrears to be $17,789.15 and this total has not increased out of proportion since that date.

The purpose of this statement is to draw attention to the very satisfactory payment of the pledges to this time. If all the subscriptions now held had been obtained during the first week of the campaign, payment of only two-fifths of the total could have really been expected by December 31, 1925, on the five-year payment plan offered, as only four semi-annual periods have elapsed. This would have amounted to $196,119.08 and the actual amount collected was $174,274.63, although the subscriptions have been received over the entire time; about $100,000 since September 1, 1925.

Collections are, therefore, keeping pace with the reasonable expectancy so far, coupled with the total of subscriptions; this indicates the interest which has been shown in this great undertaking and the seriousness with which the pledges were made. E. F. K.

The results shown will be pleasing information for the contributors, induce additional subscriptions, and persuade others to subscribe to the greatest and most far-reaching proposition ever undertaken by pharmacists for the cause of pharmacy and all that is comprehended by its service.

A better illustration of the foresight and dependability of those interested in pharmacy could hardly be given than that in the foregoing statement. E. G. E.

THE BEGINNINGS OF MEDICINE.

WILBUR C. Abbott, in the *Yale Review*, says that "the poor old past is indeed, pretty well discredited nowadays." Further on he states—"It (the poor old past) was infused with such odd enthusiasms for all sorts of things which we now

recognize as sheer absurdities, and which would be wholly unendurable but for two things—they enable us to appreciate our own greatness, and they afford such admirable material for satire." The quoted lines show, of course, that the writer applies the measure of others. In this brief comment, without further reference to the foregoing, some of the beginnings of medicine will be referred to and a recently published book—"The Healing Gods of Ancient Civilization"—by Walter Addison Jayne, M.D., has suggested the writing.

In this interesting volume Dr. Jayne deals with the ancient methods of religious healing and the pagan gods of medicine. The author considers in sequence the healing gods of ancient Egypt up to those of more recent periods. He writes—"It should be noted that one of the most important features of the early history of medicine is the essential uniformity in principle of beliefs prompted by the human religious instinct as they relate to the healing customs of the peoples widely separated by space and time, differing only in details of racial and national coloring." "The methods of healing disease, devised by the gods and communicated to their representatives, the priests, were not subject to improvement by man, hence they were jealously guarded, preserved and became traditional." The superstition that sickness was the work of an evil spirit and every form of disease required a specific demon made it necessary to classify them in a way that has a relation, although very remote, to the materia medica.

Dr. H. H. Rusby has given us an interesting account of South American ceremonials; our Indians still go through certain forms for making their medicines more effective; the African witch doctor adds astrological readings and incantations to his administrations; the natives of Congo tempt the demon to come out of the body of a sick person by bright colors, etc. The point, however, in this comment is that, notwithstanding the traditional customs in connection with the administrations of some of the medicines, our materia medica is indebted to the poor old past and primitive people for a number of its most important drugs. The Malay acquainted us with Nux Vomica, the African gave us Physostigma and Strophanthus, we are indebted to our Indians for Cascara, and those of South America employed Cinchona long before it cured the Countess of Chinchon of the fever. Medicine has its romance and its history has acquainted us with remedial agents that have added to the value of our materia medica and are used daily in the treatment of the sick. E. G. E.

IMPORTANCE OF A SENSE OF NUMBERS.

RECENTLY the head of a university department commented on the inability of many students to grasp the sense of numbers. They were adept in making calculations, but deficient in making comparisons with figures; a number meant just that to them, but did not enable them to discover errors by the application of judgment. The same problem, in which figures only were involved, did not evidence the difficulties of the very same students in making calculations wherein weights and measures or other factors of the transactions entered.

Reference was also made to the deficiency of what he termed the sense of numbers in the use of an adding machine that had not been cleared before making

the next calculation. A sense of numbers would have discovered the error. One operator turned in totals which another contestant challenged. Pulling the ribbons through his fingers, he said: "The first column is about 50,000 too little, the second 35,000—a page has been skipped."

Another point raised was that students do not grasp the value of percentages in actual practice. This was tried out in determining percentages of decrease and increase in crop reports, of two years, which were given to students for comparison.

The comment is made because of the importance of the application of figures in pharmaceutical manufacture and in dispensing prescriptions. Safe dispensing comprehends not only proper compounding but a determination of figures involved in formulas, prescriptions and dosage. The usual procedure as taught in schools of pharmacy instructs the coming pharmacist in all of these points, but mention is made because of the deficiencies cited in those engaged in other activities. E. G. E.

THE COMING TRADE CONFLICT IN LATIN AMERICA.

"THE American exporter cannot afford to regard his present success in overseas trade with complacency. Some of the advantages we have enjoyed through adequate working capital, superior technique and efficient labor are certain to be diminished in some degree as the stabilizing effects of recent European economic settlements are more fully realized. In great neutral markets like Latin America, the next few years will be critical years, not without discouragements and marked by competitive practices, many of which in our domestic markets we have outlawed by legislation, but the sales genius and staying power of the American exporter, his determination to cut out wasteful trade practices and to carry out a carefully planned, long-view policy will enable him to hold his own in the face of stiffening European competition."

This was the gist of an address delivered in Boston, December 28, at a meeting of the New England Export Club by Dr. Julius Klein, Director of the United States Bureau of Foreign and Domestic Commerce, Department of Commerce. On several occasions mention has been made in these columns and under "News Items" to ambassadors of European industrial and professional activities, who were strengthening the bonds of friendship in this country and Latin America. Relative thereto, Dr. Klein said in part:

"Let us review some of the more general evidence of the competitive intent of Europe in Latin America, passing on subsequently to actual cases and characteristic practices. There is admittedly an intended commercial significance to the recent visits of European royal globe-trotters to that part of the world. Such tours of titled 'trade ambassadors' materially assist the ground-work of international relationships, especially when supplemented by dexterous publicity; but there is naturally some mild curiosity as to the permanence of any trade gains thus spectacularly attained. In meeting such efforts, while we cannot exhibit the royal pageantry, we have both distinguished public men and advertising genius with which we might well make our country better known in the Republics of the South.

"The past year has witnessed the visits of both private and semi-official European trade missions to various countries in Latin America. These are being preceded and followed up by floods of propaganda literature, Spanish and Portuguese trade reviews, periodicals, pamphlets, etc., from England, Germany, and Italy. Canada is also contributing a Spanish trade review."

The Department of Commerce maintains 10 offices in Latin America whose function it is to keep American business currently advised of these and a multitude of other elements of change in international trade relationships. That the American business community appreciates in fuller degree the work of this service agency is disclosed in the 7000 trade inquiries handled each day through this Department, a ten-fold increase in the last four years. But even of greater significance is the obvious recognition on the part of our business men that current information is indispensable to export operations and that our foreign sales organizations to be practically effective must comprise mobile units capable of absorbing temporary set-backs, and equipped with tactical knowledge and power to push forward, retreat, or concentrate as competition or local conditions affect the area of our advance into the world's markets.

"Finally, the American exporter interested in the Latin American market has come to realize that there is no such thing as trade conquest, that is, all gains in the world's markets must be made on the basis of continuing service if they are to be held permanently. This is discouraging speculative enterprise and encouraging the entrance into this great Latin-American market of the best elements in our commerce and industry. And they are proceeding on the basis that trade with our Latin neighbors must advance on the basis of reciprocal advantages, that with every upward lift of American sales or investment there must be commensurate improvement in the economic well-being of the peoples of that great area."

Coöperating with all divisions of the drug trade the foregoing portions of Dr. Klein's address have a rightful place in these columns. Also, the U. S. Pharmacopœia is printed in Spanish and is coming into more general use; the publication of a Spanish edition of the NATIONAL FORMULARY might be considered. American pharmaceutical and chemical manufacturers enjoy the confidence and patronage of the South American drug trade. E. G. E.

OFFICERS-ELECT OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Chairman E. V. Howell and his associates, J. G. Beard and E. V. Kyser, on the Board of Canvassers have announced the result of the vote by mail for officers of the AMERICAN PHARMACEUTICAL ASSOCIATION, as follows:

President, Theodore J. Bradley, of Massachusetts; *First Vice-President,* George Judisch, of Iowa; *Second Vice-President,* Arthur G. Hulett, of Arizona; for *Members of the Council:* James H. Beal, Illinois; Charles H. LaWall, Pennsylvania; and William B. Day, Illinois.

The officers-elect will be installed at the meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION in Philadelphia, during the week of September 13th.

SCIENTIFIC SECTION

THE EFFECT OF HYDROGEN-ION CONCENTRATION UPON EMULSIONS.*

BY JOHN C. KRANTZ, JR., AND NEIL E. GORDON.[1]

INTRODUCTION.

Since the recent publication of Clayton's Monograph (1) on Emulsions, the attention of the pharmacist and physical chemist has been brought very definitely to this comparatively virgin field of investigation.

Although pharmacists for years have considered the presence of acids detrimental to the stability of emulsions, whereas alkalis have been looked upon as stabilizers, on account of their union with vegetable and animal oils to form soap, little or no work has been done to study the influence of changes of hydrogen-ion concentration upon emulsions. The importance of the stability of emulsions and those agents which influence this cannot be over-estimated; not only has this field an important pharmaceutical significance, but manufacturers of salad dressings and food products in general (many of which are emulsion-like in nature) are calling upon the chemist to interpret and rectify the instability of their products.

Aside from the before-mentioned practical applications of this problem, it is extremely interesting from a purely scientific point of view to determine the influence of hydrogen-ion concentration upon emulsification and emulsions, as this factor has played an important role in other chemical and physical problems. These facts were the salient points which prompted the investigation of this problem.

METHOD OF STUDY.

Acacia and tragacanth were the two emulsifying agents studied with emulsions of cottonseed and heavy liquid petrolatum (Nujol). Solutions of various hydrogen-ion concentrations were prepared by mixing normal sodium hydroxide solution and normal hydrochloric acid respectively, with water in various dilutions. The p_H of these solutions was determined by the electrometric method. These solutions served as the diluents in the preparation of 25% emulsions of the oil—the total volume of the emulsion in each case was 40 cc.

In the emulsions made with tragacanth 0.5 Gm. of the tragacanth was employed, whereas 2.5 Gm. of acacia was used in the emulsions prepared with this substance. The emulsions were prepared by trituration in a mortar—mixing the emulsifying agent with the oil and adding the aqueous solutions—as far as possible uniform conditions of temperature, pressure and time of trituration and rapidity of dilution were kept constant.

The finished emulsions were stored at room temperature in small graduated cylinders and their permanence studied. Complete separation of the emulsified portion from the aqueous layer is termed separation, creaming or partial separation, which is easily re-incorporated by simple agitation, is not regarded as separation.

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* Read before Scientific Section, A. PH. A., Des Moines meeting, 1925.

[1] A portion of the thesis submitted by the first author to the graduate faculty of the University of Maryland in partial fulfilment of the requirements for the degree of doctor of philosophy.

RESULTS.

TABLE I.—COTTONSEED OIL EMULSIFIED WITH ACACIA.

Degree of Separation in Cc. in Different Time Periods.

No.	p_H	1.5 Hours.	7 Days.	14 Days.	22 Days.	30 Days.	37 Days.	50 Days.
1	0.4	..	14	C. S.	C. S.	C. S.	C. S.	C. S.
2	0.9	..	5	10	10	10	10	10
3	1.4	..	2	5	5	5	5	5
4	2.0	..	..	..	..	..	..	..
5	2.94	..	..	..	..	..	..	..
6	3.85	..	..	..	..	..	..	..
7	4.45	..	..	..	..	..	..	..
8	5.1	..	..	..	..	..	..	..
9	6.3	..	..	..	..	..	..	..
10	6.9	..	..	..	..	..	..	..
11	7.85	..	..	..	..	..	..	..
12	8.7	..	..	..	..	..	..	1
13	10.5	..	..	..	..	..	..	3
14	11.8	..	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.
15	12.5	..	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.
16	13.2	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.

C. S. = Complete Separation.

After this period there was no change noticed for weeks and the emulsions when discarded months later retained the relationship to permanence as indicated by the table. The creaming effect reached a maximum of 27 cc. in about 22 days. However, as mentioned before this phenomenon was not considered as separation.

Another series of cottonseed oil emulsions with acacia was prepared over approximately the same range of p_H but solutions of slightly different values were employed.

TABLE II.—COTTONSEED OIL EMULSIFIED WITH ACACIA.

Degree of Separation in Cc. in Different Time Periods.

					Days.								
No.	p_H.	1.5 Hr.	12 Hr.	2.	3.	6.	9.	14.	21.	29.	37.	45.	63.
1	0.6	..	1	1.5	2	3	3	3	5	6	C. S.	C. S.	C. S.
2	1.05	..	0.5	1	1	1	1	1	2	4	4	4	4
3	1.6	..	..	..	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
4	2.65	..	..	..	..	..	..	..	..	..	..	..	..
5	3.4	..	..	..	..	..	..	..	..	..	..	..	..
6	4.2	..	..	..	..	..	..	..	..	..	..	..	..
7	5.2	..	..	..	..	..	..	..	..	..	..	..	..
8	6.25	..	..	..	..	..	..	..	..	..	..	..	..
9	7.8	..	..	..	..	..	..	..	..	..	..	..	..
10	8.5	..	..	..	..	..	..	..	..	..	..	..	..
11	9.45	..	..	..	..	..	..	..	..	..	..	..	..
12	10.35	..	..	..	..	..	..	..	..	..	..	..	..
13	11.8	..	..	1	1	2	2	2	5	6	6	7	7
			3 cc.	deep	deep	yellow							
14	12.4	..	yellow	yellow	3	3	5	5	7	15	C. S.	C. S.	C. S.
15	13.35	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.

Likewise in this series the creaming effect reached a maximum of 27 cc. in about 22 days.

TABLE III.—COTTONSEED OIL EMULSIFIED WITH TRAGACANTH.

Degree of Separation in Cc. in Different Time Periods.

No.	P_H.	12 Hrs.	7 Days.	14 Days.	22 Days.	30 Days.	37 Days.	50.	74.
1	0.4	..	3	5	5	5	5	5	C. S.
2	0.9	..	0.5	1	2	2	2	2	C. S.
3	1.4	..	0.5	1	1	1	1	1	1
4	2.0	..	3	6	9	10	13	13	C. S.
5	2.94	..	9	17	19	26	27	C. S.	C. S.
6	3.85	..	1	2	2	2	2	5	C. S.
7	4.45	..	9	18	26	28	29	C. S.	C. S.
8	5.1	..	2	3	4	6	8	C. S.	C. S.
9	6.3	..	..	..	..	..	..	..	1
10	6.9	..	..	..	25	28	29	C. S.	C. S.
11	7.85	..	6	10	22	24	26	26	C. S.
12	8.7	..	3	5	9	11	14	C. S.	C. S.
13	10.5	..	2	4	6	8	10	C. S.	C. S.
14	11.8	..	yellow	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.
15	12.5	yellow	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.
16	13.2	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.

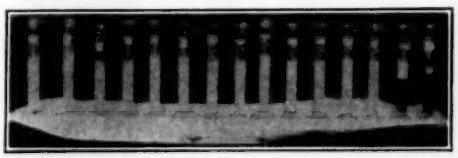


Fig. 1.—Cottonseed Oil Emulsions with Acacia from Table II after 37 days. From left to right 1–15.

Fig. 2.—Cottonseed Oil Emulsions with Acacia from Table II showing #1, #6 and #15, after 37 days.

TABLE IV.—COTTONSEED OIL EMULSIFIED WITH TRAGACANTH.

Degree of Separation in Cc. in Different Time Periods.

							Days.					
No.	P_H.	12 Hrs.	2 days.	5.	10.	17.	25.	33.	41.	58.	100.	130.
1	0.6	..	..	..	..	..	2	3	4	5	8	10
2	1.05	..	..	..	..	..	..	1	1.5	2	6	10
3	1.6	..	..	..	..	..	..	..	..	1	8	20
4	2.65	..	..	..	..	..	..	..	..	5	16	25
5	3.4	..	..	..	..	..	..	2	5	11	17	C. S.
6	4.2	..	..	..	..	2	3	6	8	11	12	C. S.
7	5.2	..	..	..	..	..	2	5	10	15	23	C. S.
8	6.25	..	..	..	..	..	1	5	8	11	17	C. S.
9	7.8	..	..	..	1 cc.	5	22	30	30	35	35	C. S.
10	8.5	..	..	..	..	2	4	10	11	16	22	C. S.
11	9.45	..	..	..	..	..	3	8	10	16	21	C. S.
12	10.35	..	..	..	..	7 cc.	21	25	26	26	26	C. S.
13	11.8	..	..	..	25 cc.	25 cc.	25	25	27	27	27	C. S.
14	12.4	light yellow	deeper yellow	deeper yellow	3 cc.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.
15	13.35	deep yellow	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.

TABLE V.—NUJOL EMULSIFIED WITH ACACIA.

Degree of Separation in Cc. in Different Time Periods.

								Days.					
No.	P_H.	3 Hrs.	1.	2.	4.	7.	12.	19.	27.	35.	43.	60.	100.
1	0.6	..	..	1	2	2	2	3	20	26	27	27	27
2	1.05	..	..	..	1	1	2	2	3	3	3	3	3
3	1.6	..	..	..	..	..	..	..	..	..	..	..	..

TABLE V.—(*Continued*).

No.	p_H.	3 Hrs.	1.	2.	4.	7.	Days. 12.	19.	27.	35.	43.	60.	100.
4	2.65	..	..	..	..	..	..	..	..	..	..	..	..
5	3.4	..	..	..	..	..	..	..	..	..	..	..	..
6	4.2	..	..	..	..	..	..	..	..	..	..	..	..
7	5.2	..	..	..	..	..	..	..	..	..	..	..	..
8	6.25	..	..	..	..	..	..	..	..	..	..	..	..
9	7.8	..	..	..	..	..	..	..	..	..	..	..	..
10	8.5	..	..	..	..	..	..	..	..	..	..	..	..
11	9.45	..	..	..	..	..	..	..	..	..	..	..	..
12	10.35	..	..	..	..	..	..	..	..	..	..	..	..
13	11.8	..	..	..	..	..	..	..	..	yellow	deeper yellow	deep yellow	deep yellow
14	12.4	..	yellow 1	1 cc.	2 cc.	25 cc.	25	25	26	26	26	26	26
15	13.35	yellow 1.5	2 cc. deeper yellow	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.

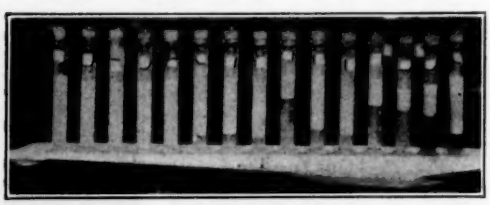


Fig. 3.—Cottonseed Oil Emulsion with Tragacanth after 41 days from Table XIV. From left to right 1–15.

Fig. 4.—Cottonseed Oil Emulsions with Tragacanth #2 and #14 after 41 days.

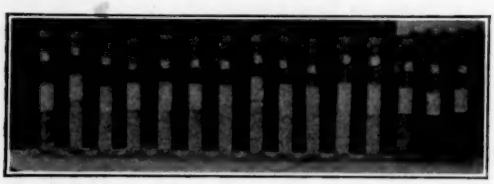


Fig. 5.—Nujol Emulsions with Acacia from Table V after 35 days. From left to right 1–15.

Fig. 6.—Nujol Emulsions with Acacia from Table V—#1, #7, and #15 after 35 days.

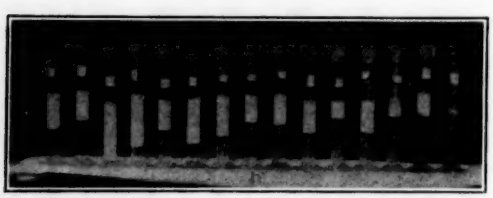


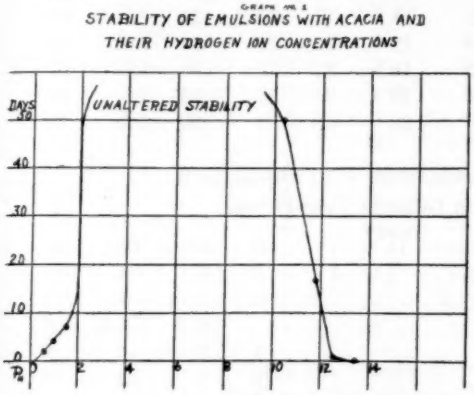
Fig. 7.—Nujol Emulsions with Tragacanth from Table VI after 33 days. Left to right 1–15.

Fig. 8.—Nujol Emulsions with Tragacanth from Table VI #3 and #15.

Tables I to VI inclusive indicate that there is a long range of hydrogen-ion concentration over which the emulsions made with acacia are stable and, further, that these results are the same with a vegetable or a mineral oil. With tragacanth the most stable point of hydrogen-ion concentration is from p_H 1.8 to 2.3. The average

stability of the experiments recorded in Tables I to VI can be easily observed from Graphs Nos. 1 and 2. The ordinates of Graph No. 2 represent the amount of separation per day over a period of 60 days and multiplied by ten to eliminate decimals.

Graph No. 2 indicates that over a large range of p_H the stable point is approximately p_H 1.90. With this in mind other series of emulsions were prepared covering the acid range of p_H with smaller variations in order to determine the exact



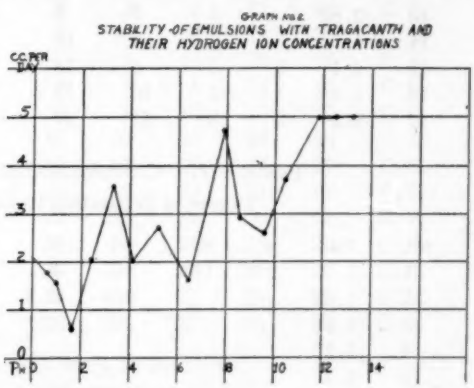


TABLE VI.—NUJOL EMULSIFIED WITH TRAGACANTH.
Degree of Separation in Cc. in Different Time Periods.

						Days.						
No.	p_H.	12 Hrs.	1.	3.	6.	11.	17.	25.	33.	41.	60.	100.
1	0.6	..	..	..	2	4	8	12	18	21	22	22
2	1.05	..	..	0.5	5	10	17	21	22	23	24	27
3	1.6	..	..	..	..	..	..	..	2	2	9	22
4	2.65	..	..	..	..	1	3	5	8	12	19	25
5	3.4	..	..	..	2	7	12	17	21	22	26	28
6	4.2	..	..	..	..	2	3	6	10	10	20	26
7	5.2	..	..	..	4	8	11	15	16	17	21	26
8	6.25	..	..	..	1	5	10	18	23	26	28	29
9	7.8	..	..	..	3	6	10	16	21	23	25	28
10	8.5	..	..	..	2	8	11	18	20	21	23	24
11	9.45	..	..	..	..	10	24	28	30	30	31	38
12	10.35	..	..	..	..	7	10	16	20	22	25	38
13	11.8	..	..	..	25	25	30	30	30	30	30	30
14	12.4	yellow color deep yellow	deeper yellow 1 cc.	deeper 2 cc.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.
15	13.35	2 cc.	10	20	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.	C. S.

TABLE VII.—COTTONSEED OIL EMULSIFIED WITH TRAGACANTH.
Degree of Separation in Cc. in Different Time Periods.

						Days.					
No.	p_H.	4.	6.	8.	10.	12.	14.	17.	21.	25.	32.	38.
1	1	1.5	1.5	1.5	2	2	2	3	4	5	6.5	8
2	1.92	...	...	..	..	..	1	2	3.5	5	8	11
3	2.08	...	...	..	..	..	..	..	0.5	1	2.5	4
4	2.22	...	...	..	..	..	..	..	1	3	8	13
5	2.4	...	...	..	..	..	..	..	0.5	1	2	3
6	2.65	...	...	..	..	..	..	1	2	5	11	14
7	2.94	...	...	1	1	2	2.5	4	4	5	9	12

TABLE VII.—(*Continued*).

No.	P_H.	Days. 4.	6.	8.	10.	12.	14.	17.	21.	25.	32.	38.
8	3.02	...	...	..	0.5	0.5	1	1	2	3	3	5
9	3.15	...	1.5	3	4	6	7	9	11	13	16	18
10	3.3	...	...	..	1	1.5	2	3	4	6	8	10
11	3.6	...	2	4	7	9	11	13	17	19	22	23
12	3.7	...	2.5	4	7	9	11	13	17	19	22	24
13	3.82	...	3	5	9	12	15	17	20	21	22	23
14	4	...	3	7	13	17	19	22	23	24	24	25
15	4.1	2	5	9	13	17	19	22	25	26	26	27
16	4.4	1	5	10	15	17	19	21	23	24	25	26
17	4.5	2	8	21	27	28	28	28	29	29	29	29

TABLE VIII.—COTTONSEED OIL EMULSIFIED WITH TRAGACANTH.

Degree of Separation in Cc. in Different Time Periods.

No.	P_H.	Days. 4.	6.	8.	10.	12.	14.	17.	21.	25.	32.	38.
1	1	1	1	2	3	3	3	4	5	6	9	11
2	1.92	...	...	0.5	0.5	0.5	1	1.5	3	5	9	13
3	2.08	...	...	..	..	..	..	..	..	0.5	1.5	2
4	2.22	...	...	..	..	..	..	..	1	2	4	6
5	2.4	...	...	..	..	..	..	1	3	6	13	18
6	2.65	...	...	..	..	0.5	1	2	5	8	13	16
7	2.94	...	0.5	2	4	5	7	10	15	18	23	24
8	3.02	...	...	0.5	1	1	1	2	3	4	6	7
9	3.15	...	...	..	..	1	1	2	3	4	6	7
10	3.3	...	...	1	2	2.5	3	4	6	8	11	14
11	3.6	...	2	5	9	10	12	15	16	20	23	24
12	3.7	...	1	3	5	8	10	14	19	22	23	24
13	3.82	...	2	4	7	9	10	13	17	19	22	23
14	4.0	1.5	5	8	10	12	13	15	18	20	22	23
15	4.1	1	3	5	6	8	10	11	14	17	19	21
16	4.4	2	5	9	11	13	15	17	19	23	25	25
17	4.5	2	5	8	12	15	17	21	24	25	25	26

TABLE IX.—NUJOL EMULSIFIED WITH TRAGACANTH.

Degree of Separation in Cc. in Different Time Periods.

No.	P_H.	Days. 3.	5.	7.	9.	11.	13.	16.	20.	24.	31.	37.
1	1	1	2	5	9	12	14	14	19	20	22	23
2	1.92	..	..	..	..	..	1	1	3	7	14	19
3	2.08	..	..	..	1.5	3	5	10	20	20	27	27
4	2.22	..	..	..	..	0.5	0.5	1	6	15	24	26
5	2.4	..	..	..	..	1.5	4	9	17	22	26	27
6	2.65	..	..	..	1	2.5	4	6	11	16	C. S.	C. S.
7	2.94	..	..	5	14	19	22	25	25	25	C. S.	C. S.
8	3.02	..	..	2	14	19	22	25	28	28	C. S.	C. S.
9	3.15	..	..	1	2	3	4	6	9	12	17	19
10	3.3	..	2	6	14	19	23	23	27	27	C. S.	C. S.
11	3.6	..	3	11	22	25	26	27	27	27	C. S.	C. S.
12	3.7	1	8	18	22	24	25	25	26	27	C. S.	C. S.
13	3.82	..	9	13	23	25	26	27	28	28	C. S.	C. S.
14	4.0	2	17	21	24	24	26	27	27	27	C. S.	C. S.
15	4.1	..	13	23	25	26	26	27	28	28	C. S.	C. S.
16	4.4	..	4	12	22	26	27	29	29	29	C. S.	C. S.
17	4.5	..	10	21	25	26	27	28	28	28	C. S.	C. S.

TABLE X.—NUJOL EMULSIFIED WITH TRAGACANTH.
Degree of Separation in Cc. in Different Time Periods.

No.	p_H	Days. 3.	5.	7.	10.	12.	14.	17.	21.	25.	
1	1	1	3	9	15	18	18	21	23	23	C. S.
2	1.92	..	..	..	0.5	1	2	4	13	18	C. S.
3	2.08	..	0.5	2	4	6	9	12	17	23	C. S.
4	2.22	..	0.5	2	5	7	10	16	24	25	C. S.
5	2.4	..	..	0.5	3	5	8	14	21	25	C. S.
6	2.65	..	..	1	4	7	16	22	28	30	C. S.
7	2.94	..	0.5	2	4	7	11	16	22	25	C. S.
8	3.02	..	0.5	1.5	3	5	6	8	14	16	C. S.
9	3.15	..	1	3	4	6	8	10	15	17	C. S.
10	3.3	..	3	8	21	25	27	28	28	28	C. S.
11	3.6	3	9	15	21	23	25	26	27	27	C. S.
12	3.7	4	10	14	21	21	22	22	23	24	C. S.
13	3.82	4	12	12	21	22	22	24	25	25	C. S.
14	4	5	12	17	21	23	24	24	25	25	C. S.
15	4.1	3	15	22	28	28	29	29	29	29	C. S.
16	4.4	7	14	18	23	25	26	27	28	30	C. S.
17	4.5	5	14	20	25	26	26	27	28	28	C. S.

TABLE XI.—NUJOL EMULSIFIED WITH TRAGACANTH.
Degree of Separation in Cc. in Different Time Periods.

No.	p_H	Days. 5.	8.	10.	12.	14.	20.	24.	30.	37.
1	1	3.5	8	11	13	16	19	20	22	23
2	1.92	1	2	4.5	7	9	9	17	20	22
3	2.08	..	..	0.5	1	2	5	12	20	23
4	2.22	..	..	..	..	2	6	10	16	17
5	2.4	..	..	..	..	1	2	5	9	12
6	2.65	..	..	1	4	8	15	20	25	27
7	2.94	..	..	..	..	1	2	3	6	8
8	3.02	..	..	1	2	3	6	8	12	15
9	3.15	..	3	3	4	5	9	9	19	23
10	3.3	5	9	9	16	19	22	25	26	C. S.
11	3.6	14	20	23	25	25	27	27	27	C. S.
12	3.7	15	20	24	26	27	27	C. S.	C. S.	C. S.
13	3.82	7	15	22	28	28	28	28	28	C. S.
14	4	9	15	18	22	24	25	25	25	C. S.
15	4.1	9	15	20	24	24	25	25	25	C. S.
16	4.4	9	15	18	20	22	23	24	25	C. S.
17	4.5	10	17	19	21	22	23	24	25	C. S.

stable point. These results with Tragacanth are recorded in Tables VII to XI and the average stability over a period of 20 days is plotted in Graph No. 3. The cc. of separation per day was multiplied by ten to construct the ordinates of this graph.

Three series of acacia emulsions were prepared over the same range of hydrogen-ion concentration, but little or no variation in their stability was observed. Those prepared with a p_H 1 seemed to separate a creamy layer more readily and ultimately (after about 20 days) separated to the extent of 5 to 10 cc.

The effect of sodium chloride solution in various concentrations upon these emulsions was studied in order to determine the influence of the chlorine ion. When studied in concentrations from 1 N to 10^{-6} N it was found that none of these concentrations of sodium chloride solution affected the stability of the emulsion.

Within 4 or 5 days all emulsions separated a creamy layer of 25–27 cc. and remained in that condition for more than 150 days, the effect all concentrations of sodium chloride used showing the same results, as shown by Fig. 9.

The influence of sodium chloride solutions upon tragacanth emulsions of Nujol is shown by the following table:

TABLE XII.—NUJOL EMULSIFIED WITH TRAGACANTH IN VARIOUS CONCENTRATIONS OF SODIUM CHLORIDE SOLUTION.

Degree of Separation in Cc. in Different Time Periods.

		Days.						
No.	Normality.	5.	11.	19.	27.	35.	53.	100.
1	1	..	..	3	5	8	10	15
2	0.1	..	..	1	2	5	8	10
3	10^{-2}	..	..	1	1	2	4	8
4	10^{-3}	..	1	5	9	15	20	27
5	10^{-4}	..	1	3	5	8	15	27
6	10^{-5}	..	10	10	15	17	23	27
7	10^{-6}	10	15	21	23	25	27	27

In order to study the influence of the hydrogen ion produced from another source, solutions of sulphuric acid were prepared and the same type of emulsions were made from these. With acacia little change was noticed except in the emulsion of at p_H 1.2 where partial separation occurred. The results obtained with tragacanth may be obtained from Tables XIII and XIV and Graph No. 4.

TABLE XIII.—NUJOL EMULSIFIED WITH TRAGACANTH IN THE PRESENCE OF SULPHURIC ACID.

Degree of Separation in Cc. in Different Time Periods.

		Days.					
No.	p_H.	4.	7.	11.	15.	20.	26.
1	1.2	2	8	15	16	19	20
2	2.05	..	..	..	..	1	3
3	2.83	..	..	2	3	5	7
4	4.1	3	10	16	19	22	24
5	4.45	5	14	22	23	24	25
6	4.94	3	19	25	26	26	27

TABLE XIV.—COTTONSEED OIL EMULSIFIED WITH TRAGACANTH IN THE PRESENCE OF SULPHURIC ACID.

Degree of Separation in Cc. in Different Time Periods.

		Days.				
No.	p_H.	6.	10.	14.	19.	27.
1	1.2	..	1	2	2	4
2	2.05	..	..	..	..	..
3	2.83	..	..	1	2	6
4	4.1	..	..	2	3	6
5	4.45	1	6	10	12	12
6	4.94	..	3	5	9	10

STUDY OF THE PHYSICAL PROPERTIES OF THE EMULSIONS.

(*a*) *Surface Tension.*—This property was determined at 35° C. with a standardized tensimeter. The results with tragacanth can be seen in Graph No. 5 and with acacia in Table XV.

TABLE XV.—SURFACE TENSION OF EMULSIONS WITH ACACIA AT 35° C.

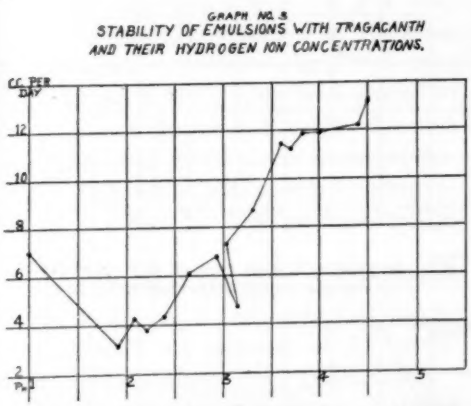
No.	p_H.	Dynes per cm.	No.	p_H.	Dynes per cm.
1	0.4	54.8	8	7.75	66.2
2	1	57.3	9	9.2	65.9
3	2.08	62.2	10	9.95	64.1
4	3.02	63	11	11.75	62.3
5	4	64.8	12	12.25	68.1
6	5.6	66.1	13	13.25	59.4
7	7.3	66.6			

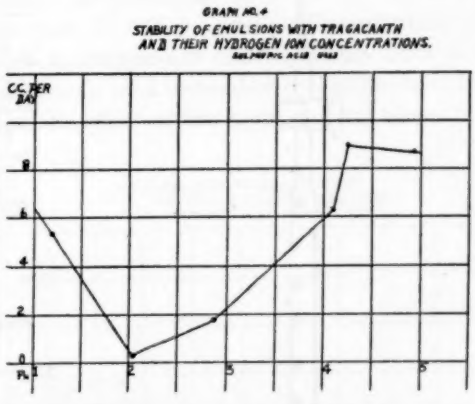
(*b*) *Interfacial Tension.*—The interfacial tension was measured at 27° C. by a pipette similar to the one used by Donnan (2) and his students (see Fig. 12). The interfacial tension with water was taken as 10 and the following formula employed, where T is the interfacial tension, V the volume of oil and N the number of drops.

$$T \propto \frac{V}{N} \qquad \text{for pure water } 10 = \frac{3K}{24}$$

$$T = K\frac{V}{N} \qquad \text{and } K = 80$$

$$\text{then } T = 80\frac{V}{N}$$





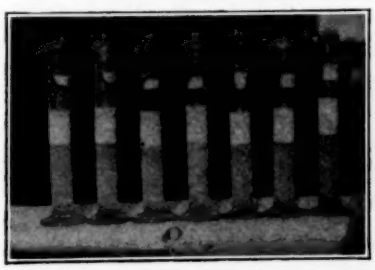


Fig. 9.—Nujol Emulsions with Acacia and Sodium Chloride Conc. of NaCl. Left to right 1 *N* to 10^{-6} *N*.

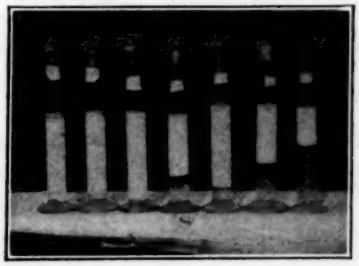


Fig. 10—Nujol Emulsions with Tragacanth from Table VII after 27 days.

Fig. 11.—Nujol Emulsions with Tragacanth #7 and #3 after 27 days.

(*c*) *Viscosity.*—Using distilled water as a standard at 30° C. the relative viscosities of a series of emulsions were determined by the pharmacopœia method. Through the entire range of hydrogen-ion concentration the relative viscosity of the acacia emulsions was 1.25. The viscosities of the tragacanth emulsions may be seen in Graph No. 7.

(*d*) *Size of Particle.*—Emulsions of Nujol were prepared after coloring the oil

TABLE XVI.—NUJOL EMULSIFIED WITH ACACIA.

No.	P_H.	Average diameter of particles in microns.					
1	0.4	3	8	10	12	15	18
2	7.3	3	6	9	13	13	13
3	7.75	4	5	10	12	12	12
4	13.25	4	7	13	15	15	15

TABLE XVII.—NUJOL EMULSIFIED WITH TRAGACANTH.

No.	P_H.	Average diameter of particles in microns.			
1	0.4	17	20	25	30
2	1	17	20	25	25
3	5.6	10	17	20	20
4	13.25	40	50	100	110

with alkanet root and the size of the particles measured microscopically. The results are tabulated in Tables XVI and XVII.

Gels of tragacanth in water of different hydrogen-ion concentrations were prepared and, after standing for 3 days, Fig. 13 shows the separation of water at the

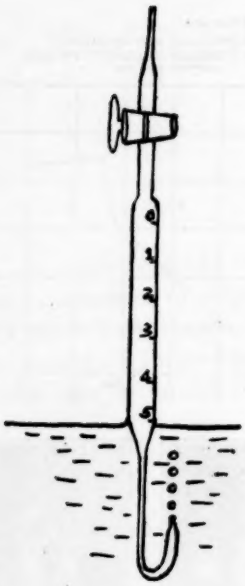
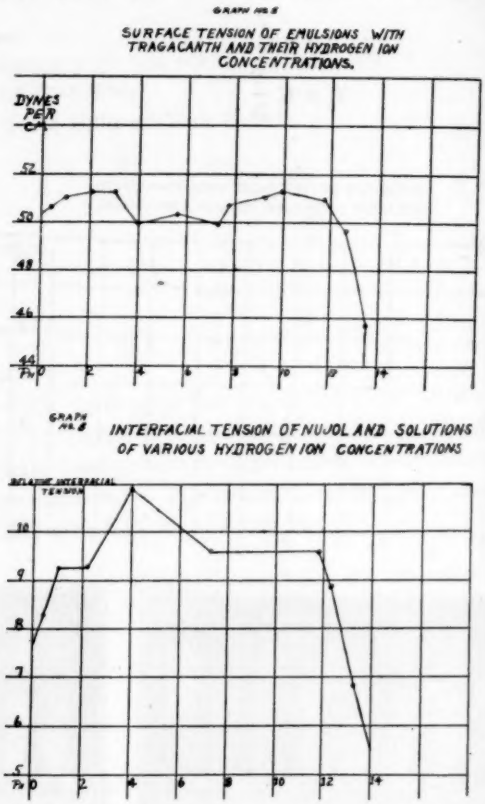


Fig. 12


SURFACE TENSION OF EMULSIONS WITH TRAGACANTH AND THEIR HYDROGEN ION CONCENTRATIONS.
DYNES PER CM.
INTERFACIAL TENSION OF NUJOL AND SOLUTIONS OF VARIOUS HYDROGEN ION CONCENTRATIONS

surface. The gels were prepared by rubbing 0.5 Gm. of tragacanth with 25 cc. of water until gelatinization occurred.

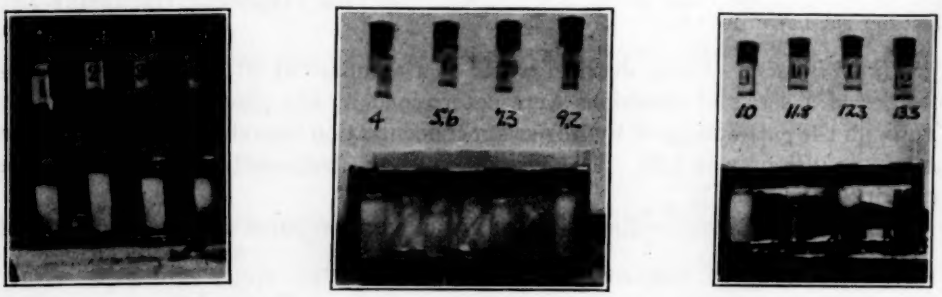


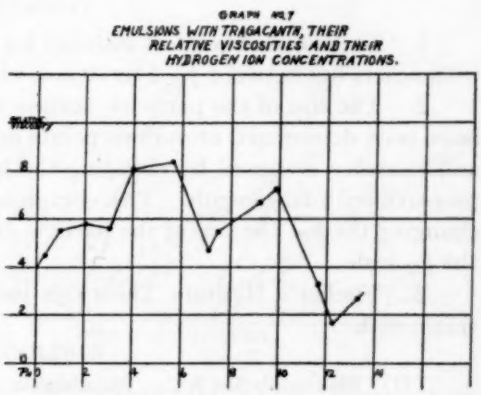
Fig. 13.—Tragacanth Gels. Lower figure indicates p_H of Gel.

DISCUSSION OF RESULTS AND THEORETICAL CONSIDERATIONS.

The data and graphs correlating the results obtained indicate that vegetable and mineral oil emulsions prepared with acacia are stable over a hydrogen-ion con-

centration varying from p_H 2 to p_H 10. The presence of alkalies is especially detrimental to the stability of these emulsions. Emulsions with acacia at various hydrogen-ion concentrations show little change in their surface tensions and their relative viscosities are identical. The size of the particle in the acacia emulsions is far more uniform and smaller than those of the tragacanth emulsions and on the acid and alkaline side of the p_H scale there is a slight increase in the size of the particle. This is exactly what one would expect as at these points also the smallest degree of stability was observed. Microscopically it was observed that this increase in the size of the particle is due to coalescence, preliminary to separation.

The emulsions prepared with tragacanth are especially stable at p_H 1.9 to p_H 2.3 and quickly separate on the alkaline side of the p_H scale. Examination of Graph No. 4 indicates that this range of hydrogen-ion concentration does not change when the acidity is produced by sulphuric acid instead of hydrochloric acid. We cannot, however, consider this as a specific effect of the hydrogen ion alone for sodium chloride produces a similar stability when the sodium-ion concentration is about 10^{-2} N as observed in Fig. 10.



A study of Graph No. 7 indicates that there is a considerable drop in viscosity with an increase of hydroxyl-ion concentration, which is characteristic of most mucilaginous material namely, that the presence of alkali reduces the viscosity of the gel. There was no change in viscosity in the emulsions prepared with acacia.

The authors feel that a maximum viscosity is not desirable as indicated by the Graph No. 8, but an optimum relative viscosity which we find to be 4 and 6; Holmes and Child (3) working with gelatin solutions support this view. It seems that in tragacanth emulsions, as observed by other investigators in other fields, that viscosity aids emulsification solely by virtue of the hindrance offered to agglutination of the oil particles.

Graph No. 5 shows that those emulsions prepared with tragacanth decrease in surface tension toward the alkaline side of the p_H scale. We, however, do not consider the phenomenon of surface tension of paramount surface in view of the postulates of Langmuir (4) who states that similar liquids may have the same surface tension against air, owing to the fact that in their surface layer similar groups or atoms may be similarly oriented.

The interfacial tension of the two liquids has been used by some as a measure of the emulsifying power of one liquid upon another. Accordingly this measurement was attempted between Nujol and tragacanth gels of various hydrogen-ion concentrations. Invariably a steady stream was obtained instead of drops as was obtained by Donnan (5) with solutions of the sodium salts of certain high molecular weight fatty acids. The interfacial tension of Nujol of solutions of various hydrogen-ion concentrations as plotted in Graph No. 5 show that the alkaline solutions reduce the interfacial tension which should increase the power of emulsification,

were the emulsifying agent not affected. We conclude therefore that the changes in hydrogen-ion concentration influence the permanency of the gel, and thus affect the stability of the emulsion.

A close examination of Fig. 13 will show that only those tragacanth gels between p_H 0.4 and 2.1 remain free from the separation of water at the surface, however the liquids between p_H 1 and 2.1 prepare the most stable gels with tragacanth; it will be recalled that the stable range of p_H for emulsions made with tragacanth practically lies within this scale. This supports Fischer's (6) Hydrate theory of emulsification, which postulates that oil is most permanently emulsified in a hydrophile colloid when just a sufficient amount of water is present to form a hydrate. We believe that with tragacanth this amount of water is a function of its hydrogen-ion concentration, therefore at the range of the p_H scale where tragacanth shows itself to possess the highest degree of hydratability, this range is the stable point for emulsions prepared with this colloid.

CONCLUSIONS.

1. The range of greatest stability for either vegetable or mineral oils prepared with acacia lies between p_H 2 to 10 and with tragacanth the range is p_H 1.9–2.3.

2. The size of the particles, surface tension, interfacial tension and viscosity have been determined at various points on the p_H scale. Changes in particle size and viscosity is caused by changing the hydrogen-ion concentration of emulsions prepared with tragacanth. The viscosities of acacia emulsions are not altered by changing the p_H, the size of the particle, however, increases on the alkaline side of the p_H scale.

3. Fischer's Hydrate Theory is substantiated in emulsions prepared with tragacanth.

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(4) *Ibid.*, 39, 1848 (1917).
(5) Koll, *Zeits.*, 4, 208 (1910).
(6) "Fats & Fatty Degeneration," (N. Y.), p. 5 (1917).

SCHOOL OF PHARMACY,
UNIVERSITY OF MARYLAND.

PLASTICITY MEASUREMENTS IN PHARMACY.*

BY E. MONESS AND P. M. GIESY.

In the manufacture of various products, such as dental creams, cold creams, ointments, etc., it is important to maintain uniformity in what is generally referred to as "consistency." It is therefore highly desirable to have a method for measuring quantitatively this property of these substances.

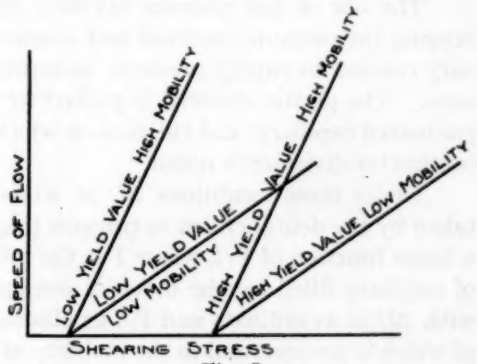
The substances above mentioned belong to the class known as plastic materials, and should be sharply differentiated from viscous liquids. In general, a plastic substance is one which will undergo continuous deformation or flow under a shearing stress only after the latter exceeds a certain value which we call the "yield shearing stress" or "yield value." In a viscous liquid this yield shearing stress

* Read before Scientific Section, A. PH. A., Des Moines meeting, 1925.

is equal to zero, that is to say, the liquid will flow under any stress, no matter how small, if sufficient time is allowed. As Maxwell expresses it in his "Theory of Heat," in the case of a plastic what is required to alter its form is sufficient force, while with a liquid it is time. Some substances that appear hard and solid are in reality viscous liquids, while others appearing to be rather soft must be classified as plastic solids. Thus a block of pitch which is so hard that it cannot be dented with your knuckles will in the course of time flatten itself out by its own weight. Similarly, if a tallow candle and a stick of sealing wax are placed horizontally between two supports, the sealing wax will in a few weeks bend under its own weight, while the softer candle will remain rigid. The pitch and the sealing wax in Maxwell's examples must therefore be considered as very viscous liquids, while the candle is a plastic solid.

In dealing then with liquids we may express by "fluidity" the speed with which the liquid will flow under a certain shearing stress. If we were to plot the speed

Fig. 1.


SPEED OF FLOW
LOW YIELD VALUE HIGH MOBILITY
LOW YIELD VALUE LOW MOBILITY
HIGH YIELD VALUE HIGH MOBILITY
HIGH YIELD VALUE LOW MOBILITY
SHEARING STRESS
Fig. 2.

of flow through a tube against the shearing stress, we would obtain a straight line which would pass through the origin. (Fig. 1.)

In a plastic, flow will only occur after the shearing stress exceeds the yield value, which is a characteristic of the material in question. When the yield value has been exceeded the flow will depend on the "mobility" of the plastic, a property analogous to the fluidity of a liquid. Plasticity is thus a complex property which is determined by two independent factors: "yield value" and "mobility." If we were to plot the speed of flow against shearing stress in the case of a plastic we would again, as in the case of a viscous liquid, obtain a straight line, but it would not pass through the origin. (Fig. 2.)

Of the methods existing for the measurement of the two characteristics of a plastic we shall mention only the tube method of Bingham.[1] It consists essentially in allowing the plastic to flow out of a capillary tube under different shearing stresses, and measuring the rate of flow under these stresses. The graphical method is the simplest one for obtaining "yield value" and "mobility." For this purpose we plot the rate of flow against shearing stress and obtain a straight line which when produced or extrapolated to the X-axis intersects the latter at some distance from the origin. This intercept is proportional to the yield value, while the slope of the curve, or what is the same thing, the ratio of the change

[1] "Fluidity and Plasticity," p. 222 (1922).

of rate of flow to the change of shearing stress, is proportional to the mobility. It often happens, and more especially at low shearing stresses, that the curve departs from linearity and shows a decided tendency to curve in towards the origin. This is explained by Bingham on the assumption of "slippage," that is, a partial movement of the plastic irrespective of plastic flow and due to slipping along the walls of the capillary as a solid rod. However, experimentally this can be avoided by using sufficiently high shearing stresses.

In our procedure we have adopted a modification of the Bingham procedure described above, which was proposed by Bingham in April 1923, before the Division of Industrial and Engineering Chemistry at the New Haven Meeting of the American Chemical Society.[1] He suggested that plasticity measurements could be made by timing the flow over successive increments of length of a capillary, this being equivalent to determining the speed of flow through capillaries of the same diameter and varying lengths.

The use of gas pressure involves complicated and expensive apparatus for keeping the pressure constant and measuring it. We decided to try to use a mercury column to supply pressure, measuring the pressure by the height of the column. The plastic material is pushed by the pressure of the mercury through the graduated capillary, and the time at which the head of the column passes alternate centimeter divisions is noted.

Under these conditions $\Delta l/\Delta t$, where $\Delta l = 2$ cm. and Δt is the actual time taken by the dental cream to traverse this length of capillary, is a variable which is a linear function of P/l, where P is the total pressure applied and l the mean length of capillary filled by the material during this time. So, when a curve is plotted with $\Delta l/\Delta t$ as ordinate and P/l as abscissa, a straight line should result, the slope of which is proportional to the mobility of the plastic, and the intercept of which on the X-axis is proportional to the yield shearing stress of the material under test. To get absolute values for mobility and yield value let us take Buckingham's formula for plastic flow when the method of allowing the material to extrude from a capillary is used:

$$\frac{V}{t} = \frac{\pi \mu R^4}{8l}\left(P - \frac{4}{3}p\right) \qquad (1)$$

where V/t is the volume rate of flow, μ is the mobility, R and l respectively the radius and length of the capillary, P the total applied pressure, and p that part of the applied pressure that goes to overcome the yield shearing stress. Under our conditions, V/t becomes $\pi R^2 dl/dt$, π, μ, R, and P are constants, and l and p are variables. Substituting $2fl/R$ for p (f being constant) we have

$$\frac{dl}{dt} = \frac{\mu R^2}{8}\left(\frac{P}{l} - \frac{8f}{3R}\right) \qquad (2)$$

If, therefore, we plot dl/dt as a function of P/l, as we have done for the sake of convenience, we see that the slope is $\mu R^2/8$, and the x-intercept $8f/3R$. The slope, therefore is proportional to the mobility, and the x-intercept to the yield shearing stress; each value is also a function of the radius of the capillary. As long as the same capillary is used, slopes give comparative mobilities, and x-intercepts comparative yield shearing stresses.

[1] Bingham and Murray ("Proc. Am. Soc. for Testing Materials," 23, II, 655 (1923)).

If we plot rate of flow dl/dt as a function of shearing stress, $F = RP/2l$, equation (2) reduces to the form

$$\frac{dl}{dt} = \frac{\mu R}{4}\left(\frac{RP}{2l} - \frac{4}{3}f\right) \quad (3)$$

Now the x-intercept equals 4/3 of the yield shearing stress and the slope the mobility times one-fourth the radius. To get the mobility directly from the slope we must put the equation in the form:

$$\frac{4}{R}\frac{dl}{dt} = \mu\left(\frac{RP}{2l} - \frac{4}{3}f\right) \quad (4)$$

and plot $4/R\ dl/dt$ as a function of $RP/2l$.

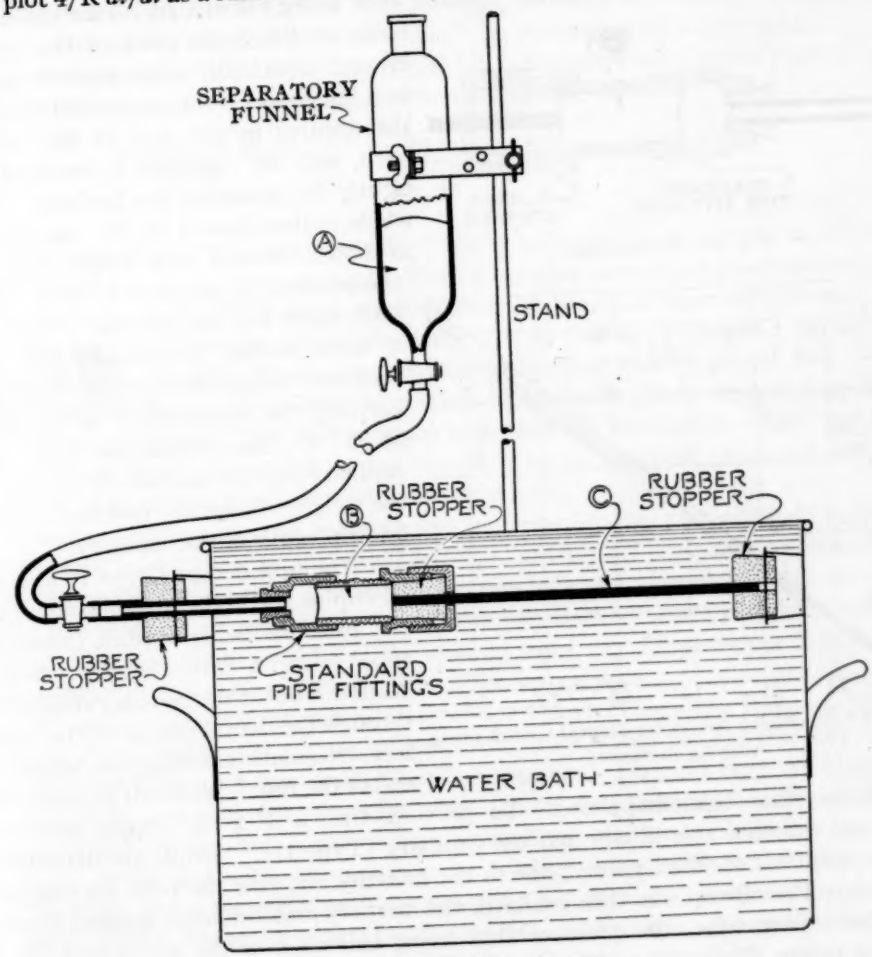


Fig. 3.—Assembled set-up.

APPARATUS AND METHOD.

Figure 3 shows a view of the whole set-up, and Fig. 4 gives the details of the plastometer proper. This is constructed entirely of standard pipe fittings, as

shown. The capillary is held in a rubber stopper which is kept in position and at the same time compressed against the capillary by the drilled pipe cap shown. The apparatus is easily taken apart and can be readily washed, dried and reassembled.

In making a run, say with dental cream, the apparatus, not including the capillary with its rubber stopper and the drilled cap and reducing bushing in which this is held, is connected as shown to the rubber tube leading from the mercury reservoir, and the mercury level adjusted by holding the apparatus in a vertical position. The stop cock on the rubber tube is now closed. The dental cream is placed in the Reservoir B by squeezing it out from a collapsible tube through a 3-inch long glass tube attached to the mouth of the collapsible tube; the filling is done from the mercury surface upward, care being taken that no air spaces or voids are left in the mass of the dental cream. Next, the apparatus is placed in a horizontal position, pushed through the opening in the wall of the water-bath, and the capillary is screwed on tightly by means of the bushing. The whole is then placed in the water-bath as shown, covered with water, and the temperature is adjusted to 25° C., and kept there for ten minutes. The run is then started by opening the stop cock and taking the proper readings, keeping the temperature of the bath at 25° C., throughout the run. The capillary can be calibrated by finding the weight of mercury required to fill a known length of the capillary.

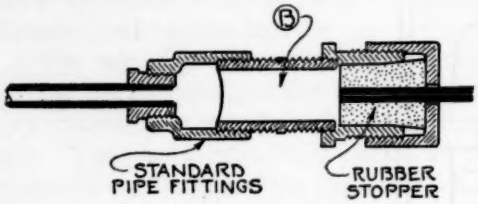


Fig. 4.—Plastometer.

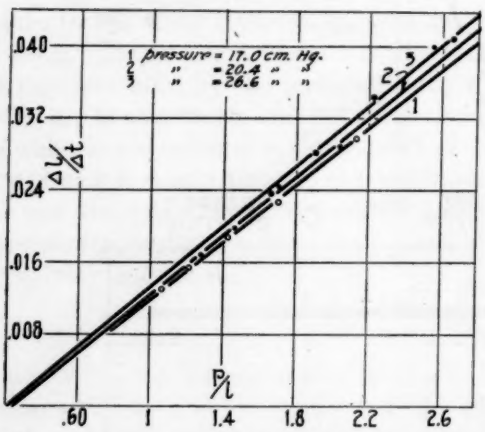


Fig. 5.—Plasticity curves for Dental Cream using varying pressures.

The first design (Type I) used an oil-cup as the body of the plastometer, the pressure being applied through a tube soldered into the top thereof. With this outfit the mercury channelled through the dental cream to the capillary, frequently entering this before the end of the run. When air pressure was used, the same thing happened. To prevent this, a 3″ x 1/4″ copper tube was inserted between the oil-cup and the capillary (Type II). Duplicate determinations with this checked poorly, due to the mercury entering the tube varying distances. The oil-cup was then omitted, the mercury pressure being applied directly to the copper tube, the pressure thus being exerted over the whole area of the dental cream (Type III). This gave runs which checked satisfactorily, but when the applied pressure was increased the values of the slope also increased:

Pressure (cm. Hg).	Slope.	Pressure (cm. Hg).	Slope.
18.9	0.0076	25.8	0.0101
22.6	0.0096	30.2	0.0128

This seemed to be due to flow-resistance not in the capillary, but in the reservoir, which had the effect of an additional length of capillary. We therefore modified the instrument to the form first described. Runs with varying pressures gave the following results:

Pressure (cm. Hg).	Slope.	x-Intercept.
17.0	0.0156	0.24
20.4	0.0162	0.24
26.6	0.0166	0.22

The curves of these runs are shown in Fig. 5.

It will be noticed that even here the effect of the internal resistance of the reservoir shows itself somewhat. It should be pointed out that it will be impossible to eliminate this entirely with any type of capillary tube instrument. With more fluid materials its effect is less noticeable. In working with fairly thick aqueous emulsions we were able to use the Type III instrument with entire satisfaction; varying the applied pressures did not affect the slopes:

Pressure (cm. liquid).	Slope.	x-Intercept.
29	0.0175	1.2
58	0.0175	1.5

The apparatus and method outlined above have certain drawbacks and limitations which it is well to keep in mind: First, it appears that not all plastic substances give equally good results: for instance, we have found it impossible to use this method for the determination of plasticity of cold cream. This has a strong tendency to move through the capillary by slippage rather than by plastic flow. It is therefore difficult to get results which when plotted will give a straight line, or to get checking results. But it is equally true that the method in which the cold cream is allowed to flow out of the capillary under different pressures and the volumes of flow measured gives little better results.

Second, in running the same plastic material by the two methods outlined above, that is, by the "penetrivity" and the "extrusion" methods, we obtain results which do not check. The reason for this lack of agreement is still obscure, and there is as yet no real reason to consider one method better justified than the other. The results obtained by either method show any differences in consistency between samples, and this is what is desired in control work.

We have also obtained relative values for the yield shearing stress of plastic materials by allowing the plastic to flow through an orifice instead of a capillary, and plotting volume of flow against applied pressure. Straight lines are obtained in such plots, and while no values for mobility can thus be obtained, the intercept of the straight line on the X-axis is a measure of the yield value. Such a run can be easily carried out with our apparatus by holding it vertically, and attaching to it a street ell, to the mouth of which is screwed a cap with an orifice of about 2 mm. The plastometer, the street ell and the cap are full of the plastic. Since the plastometer is in a vertical position, correction for drop in pressure for each point of the run must be made. Very nicely checking results are thus obtained.

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A STUDY OF THE THALLEIOQUIN REACTION AND A NEW MODIFICATION.*

BY GEORGE W. HARGREAVES.[1]

Perhaps no reaction for the characterization or detection of an organic compound is older or more widely known than the so-called thalleioquinine or thalleioquin reaction for the detection of quinine. The earliest published record was made in 1835. Since then it has been modified by various investigators. In more recent years, the chemistry of the reaction has been investigated.

Originally, the reaction was carried out by the addition of chlorine water to the solution of quinine or its salt and the subsequent addition of an excess of ammonia water. In concentrated solutions, a green precipitate of thalleioquin results, while in more dilute solutions, an emerald color is produced. It has been found that bromine water may be substituted for and is even more efficient than the chlorine water. The directions given by the ninth revision of the United States Pharmacopœia are the following:

"Add two or three drops of bromine T.S. to 1 mil of an aqueous solution of quinine (1–100), made with the aid of just sufficient diluted sulphuric acid to effect solution, and then add 1 mil of ammonia water; the liquid acquires an emerald-green color due to the formation of thalleioquin."

Vondrasek (1) obtained the reaction by treating one centigram of quinine with 1 mil of normal hydrochloric acid and 2 mils of tenth normal potassium bromate solution, then adding ammonia water.

Another variation used by Mylius (2) consists in the treatment of about a centigram of quinine with an equal bulk of potassium chlorate and a drop of concentrated sulphuric acid, with subsequent addition of ammonia water.

Lead peroxide and sulphuric acid were used by Pollaci (3) in carrying out the reaction. A centigram of quinine is dissolved in 1 mil of water and two drops of concentrated sulphuric acid. A small piece of lead peroxide is then put in and the mixture is gradually heated to boiling. After adding 3–4 mils of water, and allowing the mixture to stand, a layer of ammonia water is poured in and an emerald green ring or disc is produced. I modified this procedure by heating the mixture for several minutes on a water-bath, filtering and adding ammonia water to the clear filtered liquid. This produced excellent results.

Hyde (4) used a clear filtered solution of calcium hypochlorite and sulphuric acid to replace the chlorine or bromine water.

Thus, it is readily seen, that the function of the chlorine or bromine water in the thalleioquin reaction is primarily that of oxidation, rather than chlorination or bromination, which Vondrasek and other investigators have supposed.

I have found that failure to obtain the thalleioquin reaction when using bromine water results if any one of three conditions are true; if insufficient time is allowed for the bromine to act, if only a small amount of bromine water is added to a relatively large volume of highly diluted quinine solution, and if an excess of bromine water is added. These conditions are readily explained on the basis of oxidation. In the first instance, bromine water being a relatively mild oxi-

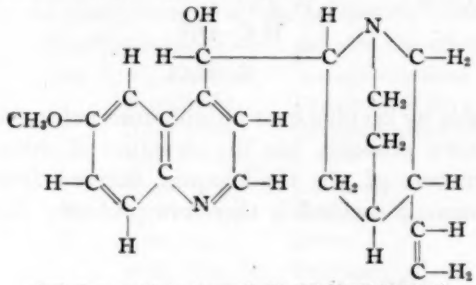
* Read before Scientific Section A. PH. A., Des Moines meeting, 1925.

[1] College of Pharmacy, University of Nebraska.

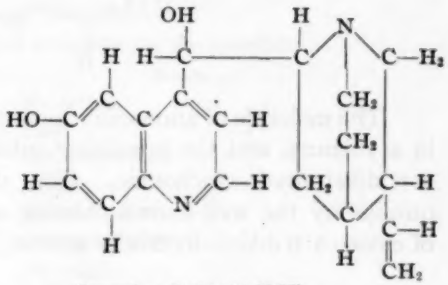
dizing agent requires a short time to react. The second instance is analagous to using an old or weakened solution of bromine water. In the third instance either oxidation is carried too far, or addition of bromine prevents the reaction in some manner.

Although in a practical way, the thalleioquin reaction is used as a test for quinine, it is also given by some of its related bases namely; quinidine, quinicine, diquinicine, hydroquinidine and cupreine; but it is not given by apoquinidine, cinchonine, cinchonidine, homocinchonidine, hydrocinchonidine, cinchonicine, dicinchonicine, quinamine, nor cinchonamine.

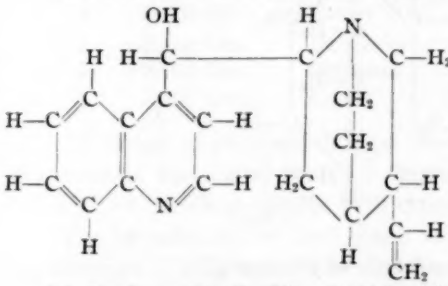
Examination of the structural formulas of some of these bases will show some interesting relationships.



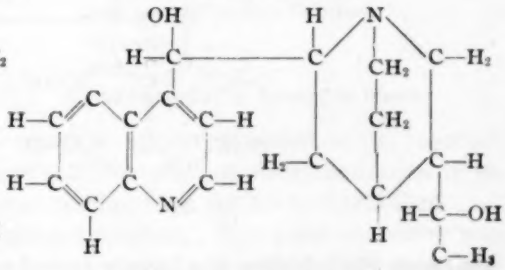
Quinine or Quinidine $C_{19}H_{20}N_2(OH)(OCH_3)$



Cupreine $C_{19}H_{20}N_2(OH)_2$



Cinchonine or Cinchonidine $C_{19}H_{21}N_2(OH)$

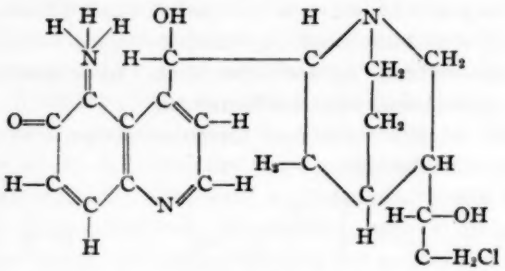


Quinamine $C_{19}H_{22}N_2(OH)_2$

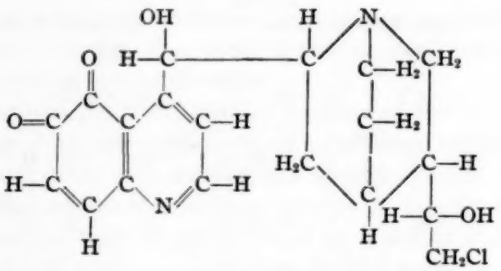
Grimaux and Arnold (5) have converted cupreine into quinine by heating it at 100°, under pressure, with metallic sodium and a solution of methyl chloride in methyl alcohol.

It is readily seen that the main point of similarity in the compounds, which give the reaction, and the main point of difference in the compounds, which do not give it, is in the 6 position of the quinoline nucleus. Those compounds which contain a more or less readily oxidizable group such as (OH) or (OCH_3), in the 6 position of the quinoline nucleus give the reaction, while those compounds which do not contain such a group fail to give it. One of the first observers of this fact was Fühner (6) who, from the fact that the reaction is given by cupreine as well as quinine, deducted that the reaction must be due to the hydroxy-quinoline group. His theory was, that in the first phase of the reaction, the chlorine converts the hydroxyquinoline group into a dichloro-ketone and in the second phase, this is converted by ammonia into a quinonimine coloring matter. He did not investigate or speculate as to the nature of the products formed where the hydroxyl group is methylated as in the case of quinine.

Perhaps the best investigation and the most conclusive evidence as to the nature of the reaction is given by A. Christensen (7). By careful treatment with ammonia water of the nitrate of the base derived from chloro-hydro-quinine he obtained a thalleioquin of the composition $C_{19}H_{21}O_3N_2ClNH_3$ with a possible structural formula of:



The molecule of ammonia is removable by keeping over phosphorous pentoxide in a vacuum, and the remaining substance probably has the structure of chloro 5:6 diketo-hydrocinchonine. The structure of the thalleioquin derived from quinine by the well-known chlorine ammonia method is therefore probably that of chloro 5:6 diketo-hydrocinchonine,



also with the addition of a loosely bound molecule of ammonia.

Evidence is adduced as to the ease with which a chlorine atom in the 5 position adjacent to a hydroxyl group in the 6 position of the quinoline nucleus of such compounds as the above is eliminated by the action of ammonia, the concurrent action of an oxidizing substance causing the formation of the .C : O.C : O. group. On this account it is possible to prepare the thalleioquin analogues from 5-chloro-6-hydroxycinchonine-hydrochloride by the action of silver sulphate or nitrate in a dilute acid medium with the subsequent addition of ammonia. In these reactions, the silver salt serves to effect the removal of the chlorine.

In an analagous manner 5-chloro-6-hydroxy-quinoline has been shown to be oxidizable to a compound which gives a green coloration with aqueous ammonia.

EXPERIMENTAL.

In experimenting with the thalleioquin reaction it was found that if after the addition of bromine water a few drops of a 2% of phenylhydrazine hydrochloride in alcohol were added and 10% ammonia water was subsequently added the mixture assumed a pink to a deep reddish wine color, varying according to the quantity of quinine used.

A careful review of the literature failed to show any record of this or a similar reaction.

After numerous trials the following technique was evolved. To 3–5 mils of an aqueous solution of quinine or its salt add a saturated solution of bromine water drop by drop until the mixture assumes a faint yellowish color. If the quinine contains 0.001 Gm. per mil or more a yellowish white precipitate will form at first but it disappears on the addition of more bromine water. Then add 3–5 mils of a 2% solution of phenylhydrazine hydrochloride in alcohol. After shaking, add a slight excess of 10% ammonia water.

It is essential that enough bromine water be added but not an excess. The best index to the fact that the optimum quantity of bromine water has been added is the asumption of a faint yellowish color by the solution.

The following is some data on the effect of bromine on the reaction.

No.	Wt. of quinine.	Amount of Br water.	Result.
1.	0.0005 Gm.	Deficiency of Br	No action
2.	0.0005 Gm.	Optimum quantity	Pink
3.	0.0005 Gm.	Excess	Greenish yellow
1.	0.001 Gm.	Deficiency	No action
2.	0.001 Gm.	Optimum	Reddish pink
3.	0.001 Gm.	Excess	Greenish yellow
1.	0.003 Gm.	Deficiency	No action
2.	0.003 Gm.	Optimum	Reddish (wine colored)
3.	0.003 Gm.	Excess	Red quickly turning to brown
1.	0.005 Gm.	Deficiency	No action
2.	0.005 Gm.	Optimum	Red
3.	0.005 Gm.	Excess	Red immediately turning to brown

An excess of phenylhydrazine also exerts an inhibiting action on the reaction. However, it was found that 3–5 drops of a 2% solution of phenylhydrazine in alcohol gives excellent results with quinine ranging from 0.0005 to 0.005 Gm.

The bromine water used was a saturated solution. The ammonia water was approximately 10% by volume. All tests were carried out with definite quantities of quinine sulphate. One gram of pure quinine sulphate was dissolved in water and the solution made up to exactly one liter. This gave a 1–1000 solution or one in which one mil represented 0.001 Gm. of quinine sulphate. From this solution other dilutions were made.

By careful manipulation, a test was obtained with 0.00001 Gm. of quinine sulphate. I failed to get a good test with the thalleioquin reaction with this quantity of alkaloid. I have found that the advantages of my reaction over the thalleioquin reaction are quite evident when working with minute quantities of alkaloid. It develops instantly and is more distinct than the thalleioquin reaction.

I also obtained the thalleioquin and my reaction by using a 10% solution of sodium carbonate in place of the ammonia water. This should prove that the primary use of the ammonia is to make the solution alkaline. However, strong alkalies inhibit or prevent the reaction.

None of the common alkaloids give or prevent these reactions except morphine and codeine, which have an inhibiting action.

It was found that if quinine is mixed with an equal amount of morphine or codeine either reaction is given quite readily, but if the proportion is greater, the

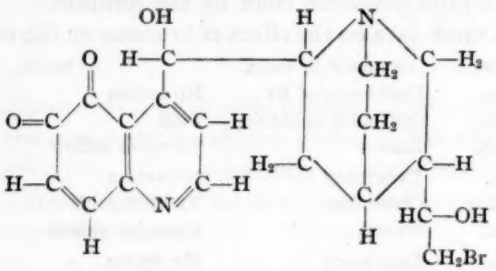
results are uncertain or the reaction may be entirely prevented. The reason for this is not known but it may be due to the reducing properties of morphine and codeine.

Since I have obtained my reaction with chlorine water and calcium hypochlorite and sulphuric acid as well as with bromine water and, since it is given by quinine and not by cinchonidine, I have concluded, that it is a modification of the thalleioquin reaction.

INTERPRETATION OF REACTION.

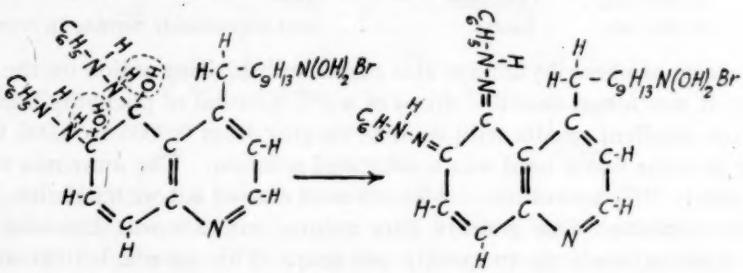
The following is the most logical explanation of my reaction from the facts known and the principles of chemistry involved.

First a diketone is formed by oxidation:



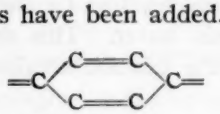
This may be caused by the addition of bromine and its removal by the ammonia or dilute alkali.

The phenylhydrazine then adds to the diketone:

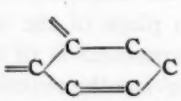


My reaction is also given with acetyl phenylhydrazine. Further research should give more facts in the mechanism of this reaction.

It is interesting to note some of the points in Witt's (8) color theory and their applications to these reactions. He attributes color to the presence of certain unsaturated groups or "chromophores" of which the most important are the following: C=C, C=O, C=N, N=N, N=O, N$\overset{O}{\underset{O}{<}}$. To these the para and orthoquinoid radicles have been added.

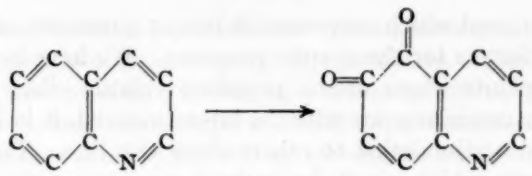


Para-quinoid



Ortho-quinoid

Thus if in the thalleioquin or my reaction, the quinoline ring is oxidized to a diketone, three chromophore groups are produced; two C=O and the ortho-quinoid group.



When phenylhydrazine is added as in my reaction, two of the chromophores are changed and in consequence the color changes.

SUMMARY.

1. The thalleioquin reaction is due primarily to oxidation.
2. A readily oxidizable group at the 6 position of the quinoline nucleus is essential.
3. A modification of the thalleioquin reaction has been found which is more efficient with smaller quantities of alkaloid.
4. The inhibiting action of morphine and codeine is quite evident if the ratio is greater than 1:1.
5. An interpretation of these reactions has been suggested.

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A PRELIMINARY EXAMINATION OF FOUR NORTHWESTERN PLANTS.*

BY E. V. LYNN AND PAUL Y. CHENG.

The climate of the northwest, and particularly of the state of Washington, is peculiarly adapted to the growth of a large variety of plants as well as to the health and comfort of human beings. It is said that there are more than four hundred varieties of wild flowers in Paradise Valley alone and many which are not found elsewhere in the state. The climate is mild and, at the same time, there are many sorts of meteorological conditions so that almost any plant can be grown within the state boundaries. Many medicinal plants of known value grow here naturally or can easily be cultivated, the drug garden at the University of Washington having been particularly successful for years with medicinal plant propagation.

Many of the native plants appear to possess qualities which would make them valuable medicinally. One can hardly walk along the country road or in a deep wood without being attracted by some strong aroma traceable to a shrub or herb which has never been investigated. Added to these possibilities are the hundreds

* Scientific Section, A. PH. A., Des Moines meeting, 1925.

of plants still unexamined which may contain potent glucosides, alkaloids, resins, fats, etc., potential factors for therapeutic purposes. We have here made a start in examining four plants whose aroma promised volatile oils. While the final results have not been commensurate with the labor involved, it is hoped that this beginning will afford a stimulation to others along this line. There are unquestionably many plants which could be utilized in some way, a majority in medicine.

Skunk Cabbage.—This is the common name for *Lysichiton camtschatcense* (Scott), *Araceae*, a perennial herb with a strong skunk-like odor. The leaves are large, 30 to 100 cm. long and 7 to 45 cm. wide, oblong, acute or acutish, narrowed at the base into a short-margined petiole. The spathe is golden-yellow, the blade boat-shaped, acute, and narrowed into a sheathing petiole. The peduncle is stout and long and the spadix cylindrical with all of the flowers crowded upon it. These are green, turning yellow. The skunk cabbage is common in swamps on the Pacific Coast from California to Alaska (1).

There are apparently no references to previous work on this plant. In the eastern part of the United States grows a plant which is also called skunk cabbage but which, as a matter of fact, differs not only in species but also in genus, although it belongs to the same family of *Araceae*. The rhizome of this, *Symplocarpus Foetidus*, Nutt., is reported to contain volatile oil, gum, fat, resin, and starch, and is affirmed to be antispasmodic, sedative, and narcotic.

Wild Ginger.—Of the numerous species of Asarum which are commonly called wild ginger, only one was examined, *A. caudatum* (Lindl), *Aristolochiaceae*. It is (1) a stemless perennial with slender branched rootstocks, 10 to 30 cm. long, sparsely hairy throughout. The leaves are reniform or cordate, 5 to 10 cm. broad, obtuse or acutish. The flowers are purplish brown, the petioles elongate and slender, and the peduncles short, 1 to 4 cm. The whole plant, which grows in shady damp woods, possesses the faint odor of ginger.

Although no mention in the literature is made of caudatum, several others of the genus Asarum have been investigated at various times and one or two of them have been suggested and used in medicine. *A. Canadense* was submitted to examination by Power (2) who found it to contain volatile oil, starch, gum, resin, fat, color, mineral salts, and a small amount of alkaloid. The oil consists principally of methyl eugenol and also esters of linalool, borneol, and terpineol, and the blue hydrocarbon, azulene. *A. Europaeum* has been examined repeatedly (3), the volatile oil containing a stearoptene which has been called asarum camphor, propenyl trimethoxy benzene. *A, arifolium* gives an oil (4) which contains safrol as the chief compound, with smaller amounts of eugenol, methyl eugenol, and asarone. *A. Blumei* oil yielded (5) eugenol and safrol. Unsaturated phenol ethers, therefore seem to be characteristic of the volatile oils of this genus.

Salol.—It is rather surprising that such a common shrub as *Gaultheria shallon, Ericaceae*, or salal, which grows in such abundance in the northwest, has not hitherto been examined chemically or medicinally. We believe that a careful study of the plant may reveal possible value to industry or medicine; at least it is interesting in that there is an absence of the methyl salicylate producing compounds of other species. Considerable work has already been done on these others, particularly the one from which the popular oil is obtained.

The leaves of *Gaultheria procumbens* have been known for years to produce an oil which contained almost entirely methyl salicylate. The minor constituents were admirably worked out by Power and Kleber in 1895 (6). *G. punctata* (*fragrantissima*, or *fragrans*) furnishes (7) a similar oil, as does also *G. leucocarpa* (7).

Gaultheria shallon is a low and almost herbaceous shrub with alternate, broad, evergreen leaves which are shiny on the upper surface and ovate-oblong, rounded or subcordate at base, accuminate, serrulate, 3 to 10 cm. long. The flowers are in axillary racemes, white or pink in color, nodding, 6 to 10 mm long. The fruit is black or dark purple, very variable in size, shape and amount of glandular pubescence, and edible. It is a very common plant in the Douglas spruce forests.

Tea Vine.—This is the common name for *micromeria douglasii*, Benth. (*M. chamissonis*, Greene), *Menthaceae*, also called *yerba buena*. It is a very low, sweet-odorous, perennial, pubescent herb with slender trailing stems, 30 to 60 cm. long. The leaves are orbicular or ovate, obtuse, rounded or subcordate at base, coarsely dentate or subentire, 6 to 25 mm. long. The flowers are solitary, axillary, the petioles 4 to 6 mm. long, and the pedicels bibracted near the base. Tea vine is common in the open woods often entangled with other plants, usually the twinflower. The whole plant has a pleasant minty or balsamic odor.

Power and Salway (8) have examined tea vine and its oil. A semi-solid substance accompanying the oil was identified as palmitic acid but no other components were established. *M. japonica* was found by Murayama (9) to yield an oil with a characteristic peppermint-like odor. He identified menthone and stated that menthol may also be present.

The samples used were collected in the campus woods and identified by Dr. G. B. Rigg and Mr. F. J. Goodrich. The whole plant of wild ginger and of tea vine, the leaves of salal, and the flowers and spathes of the skunk cabbage were used. The loss in weight of each on air drying and after heating in a boiling-water oven were determined. Since each of the plants except salal possessed a characteristic odor, a large quantity of the freshly collected samples was distilled with steam. The air-dried were then subjected to successive extraction with petroleum benzin, ether, alcohol, and water, the amount of each extract being estimated. The first two were heated in an oven at 110° C. to determine the amount of volatile material and tested for unsaponifiable material with alcoholic sodium hydroxide. All of the extracts were tested for alkaloids with Mayer's, Wagner's, and Schneiber's reagents and with tannic acid and picric acid. They were also hydrolyzed by sulphuric acid in order to detect evidences of glucosides. The results are tabulated herewith:

	Skunk cabbage.	Wild ginger.	Salal.	Tea vine.
Loss Air-drying	85.41	84.63	45.54	70.98
Vol. at 100° C.	92.07	92.11	51.53	79.19
Benz. Ext.*	1.46	1.83	2.04	2.96
Ether Ext.*	2.13	3.04	4.07	1.44
Alcohol Ext.*	28.01	21.11	16.76	19.89
Water Ext.*	17.95	17.19	7.85	16.38
Volatile Oil	None	0.05%	None	0.03%
Volatile Benz. Ext.*	0.54	0.52	0.43	0.46
Volatile Ether Ext.*	0.76	1.41	0.99	0.32

* Based on the dry sample.

Skunk cabbage, in spite of its peculiar aroma, apparently gives no volatile oil, although the aqueous distillate possessed some odor, was slightly acid, and deposited a minute amount of white sediment. There were no indications of glucosides but possibilities of the presence of some alkaloids.

Wild Ginger yielded a small amount of oil which had a very strong pungent odor. It solidified at —4 to —5° C. and had a refractive index of 1.5195 at 22°. There were indications also of acid resins and alkaloids, but probably no glucosides.

Salal, although a member of the genus *Gaultheria* which universally gives methyl salicylate, gave no indication of a volatile oil, even after long maceration with acidified water. The aqueous distillate was first cloudy and later precipitated but had very slight odor. The precipitate was probably a hydrocarbon but was not very carefully examined because of the small amount. During the water extraction a similar white precipitate appeared on cooling, indicating waxy hydrocarbons which give the leaves their shiny nature. There was no evidence of the presence of any glucosides and but slight tests for alkaloid.

Tea Vine was found to contain a small amount of volatile oil accompanied by the deposition of a solid material, thus according with results previously reported on this plant. Distillation of larger quantities of the vine, however, gave but traces of oil and it has since been found that drying seems to dissipate the volatile components almost entirely. The water extract deposited what was apparently the same solid observed in distillation. No indications of the presence of glucosides or alkaloids could be obtained.

Work is now under way in this laboratory to examine more carefully all of these plants and others of the numerous herbs and shrubs in the state. Particularly are we interested in wild parsnip, water hemlock, salal, and dog fennel.

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COLLEGE OF PHARMACY,
UNIVERSITY OF WASHINGTON,
SEATTLE, WASH.
August 20, 1925.

CHANGES IN U. S. PHARMACOPŒIA X.

BY E. FULLERTON COOK.*

It has been found necessary to make the following changes in the United States Pharmacopœia, Tenth Revision. These alterations have been made in the plates so that recent printings need not be corrected.

* Chairman U. S. P. Revision Committee.

Acidum Sulphuricum Aromaticum, page 27—

Add the following statement: "Alcohol content, by volume, 82 to 85 per cent."

Aethylmorphinæ Hydrochloridum, page 37—

Change the second test for identity to read: "Add a drop of ferric chloride T.S. to a solution of about 0.01 Gm. of the salt in 10 cc. of sulphuric acid, and warm it on a water bath: the mixture will become at first green, then deep-violet blue, and, after the addition of a drop of nitric acid, deep red."

Benzoinum, page 78—

Change the last test for identity to read: "Treat about 1 Gm. of powdered Benzoin with 15 cc. of warm carbon disulphide, filter, wash the filter with an additional 5 cc. of carbon disulphide, and allow the filtrate to evaporate spontaneously: the residue is not less than 12.5 per cent. This residue responds to the tests for identity under *Acidum Benzoicum.*

Bismuthi Subnitras, page 81—

Change the first test for purity to read: "Boil 1 Gm. of Bismuth Subnitrate with 20 cc. of a mixture of equal volumes of acetic acid and distilled water. Cool and filter. Add 2 cc. of hydrochloric acid, remove the bismuth by the addition of hydrogen sulphide, boil the mixture, and filter: the filtrate leaves not more than 0.005 Gm. of residue on evaporation and gentle ignition (*zinc, alkali earths, or alkalies*)."

Codeinæ Sulphas, page 115—

Change the third test for purity to read: "A solution of 0.5 Gm. of Codeine Sulphate in 15 cc. of distilled water requires not more than 0.3 cc. of fiftieth-normal sodium hydroxide for neutralization, using one drop of methyl red T.S. as indicator."

Collodium, page 118—

Add the following statement: "Alcohol content, by volume, 22 to 24 per cent."

Collodium Flexile, page 118—

Add the following statement: "Alcohol content, by volume, 21 to 23 per cent."

Fluidextractum Cinchonæ, page 165—

In the menstruum the "100 cc. of hydrochloric acid" should be "100 cc. of *diluted* hydrochloric acid."

Glycerinum, page 180—

In the last test on page 180 the amount of glycerin to be used for the test should be 50 *Gm.* not "50 cc."

Infusum Digitalis, page 197—

Add the following statement: "Alcohol content, by volume, 8.5 to 9.5 per cent."

Linimentum Chloroformi, page 204—

Add the following statement: "Alcohol content, by volume, 43 to 47 per cent."

Linimentum Saponis, page 205—

Add the following statement: "Alcohol content, by volume, 62 to 66 per cent."

Linimentum Saponis Mollis, page 205—

Add the following statement: "Alcohol content, by volume, 28 to 32 per cent."

Liquor Ferri et Ammonii Acetatis, page 214—

Add the following statement: "Alcohol content, by volume, 4 to 6 per cent."

Liquor Potassii Arsenitis, page 222—

Add the following statement: "Alcohol content, by volume, 1 to 3 per cent."

Mistura Glycyrrhizæ Composita, page 241—

Add the following statement: "Alcohol content, by volume, 9 to 11 per cent."

Oleum Cari, page 253—

The refractive index should read: "1.4840 to 1.4880 at 20° C."

Talcum Purificatum, page 379—

The "Note" should read: "Purified Talc is intended only as a filtering medium and for this purpose should not be finer than the powder which passes through a No. 80 sieve but is retained by a No. 100 sieve."

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Compiled by A. G. DuMez, Reporter on the Progress of Pharmacy.

All articles recorded in these lists will be presented in abstract form in the bound volumes of the YEAR BOOK, which is issued annually. Those desiring abstracts immediately can obtain them for a fee of one dollar each by communicating with A. G. DuMez, Hygienic Laboratory, U. S. P. H. S., 25th & E Sts., N. W., Washington, D. C.

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Zeit. Unters. Nahr. Genussm., 47 (1924), 238; through *J. pharm. chim.*, 2 (1925), 493

Rothwell, C. S.
Direct precipitation of calcium in milk
J. Biol. Chem., 65-I-S (1925), 129; through *Schweiz. Apoth. Ztg.*, 63 (1925), 703

Schoorl, N.
Stability of calcium acetylsalicylate
Pharm. Weekbl., 62 (1925), 1166; through *Chem. Abstr.*, 20 (1926), 90

ACCURACY OF HYPODERMIC TABLETS.

The degree of accuracy with which hypodermic tablets should comply with their declared compositions is outlined in a ruling under the Federal Food and Drugs Act issued October 22nd by the Bureau of Chemistry, United States Department of Agriculture. The text of the ruling follows:

Within the last few years the Bureau of Chemistry, in the enforcement of the Food and Drugs Act, has given particular attention to medicinal tablets, especially the more commonly used hypodermic tablets. The data thus collected show that most tablets on the market comply reasonably well with the compositions declared. A material number, however, were found to vary from the stated compositions by amounts in excess of what should be expected under properly controlled conditions of manufacture.

These preparations are of prime importance medicinally. They are manufactured from physiologically potent substances and constitute the chief dependence of the physician in emergencies. The physical characteristics of a hypodermic tablet usually furnish no information as to its quantitative composition. Physicians, druggists, and patients must rely upon the label. Serious consequences may follow any misstatement.

The Bureau of Chemistry will regard as adulterated or misbranded, or both, those hypodermic tablets which fail to comply with declared compositions to an extent greater than occurs in such tablets manufactured under properly controlled processes. In ascertaining the degree of accuracy practicable careful consideration will be given to the conclusions of committees representing the drug manufacturing industry which have studied this question thoroughly and have presented a comprehensive report to the Bureau of Chemistry. These committees have suggested the maximum variations, either above or below the labeled or claimed amounts (including all tolerances), which in their opinion should be permitted in tablets manufactured under properly controlled processes. They are as follows:

	Per cent.
Atropine sulphate hypodermic tablets purporting to contain 1/4 gr. or more	7.5
Atropine sulphate hypodermic tablets purporting to contain less than 1/4 gr.	9.0
Cocaine hydrochloride hypodermic tablets	9.0
Codeine sulphate hypodermic tablets	9.0
Morphine sulphate hypodermic tablets	7.5
Strychnine sulphate hypodermic tablets purporting to contain 1/4 gr. or more	7.5
Strychnine sulphate hypodermic tablets purporting to contain less than 1/4 gr.	9.0
Strychnine nitrate hypodermic tablets purporting to contain 1/4 gr. or more	7.5
Strychnine nitrate hypodermic tablets purporting to contain less than 1/4 gr.	9.0

METHODS OF ANALYSIS RECOMMENDED BY COMMITTEES REPRESENTING THE INDUSTRY.

The committees representing the manufacturing industry recommend the following methods of analysis of the products mentioned above. The Bureau of Chemistry, for the analysis of official samples, employs methods based upon the same general principles as those given below, although some of the details of the procedures may vary somewhat. Studies of these methods show that they give results which agree satisfactorily with those used by the Bureau of Chemistry.

These methods have been referred to the referee on drugs of the Association of Official Agricultural Chemists for his consideration or further study by that association.

HYPODERMIC TABLETS—ATROPINE SULPHATE.

In case of tablets containing 1/20 grain of atropine sulphate or in excess of this amount, dissolve at least 20 tablets in sufficient distilled water to make 100 cubic centimeters and take an aliquot equal to at least one grain of atropine sulphate.

In case of tablets containing less than 1/20 grain of atropine sulphate, dissolve a sufficient number to represent at least one grain of atropine sulphate in sufficient distilled water to make a clear solution.

In either case make the aqueous solution distinctly alkaline with ammonia and shake out with several portions of chloroform until tests with Mayer's reagent indicate that the aqueous solution has been completely exhausted of the alkaloid. Evaporate the combined chloroform extracts to dryness on the water-bath. Dissolve the residue in a few cubic centimeters of neutral alcohol. Add 10 cubic centimeters of $N/20$ sulphuric acid and titrate excess of acid with $N/50$ potassium hydroxide solution, using methyl red indicator.

Each cubic centimeter of $N/20$ sulphuric acid consumed corresponds to 0.017362 gram of atropine sulphate, $(C_{17}H_{23}O_3N)_2H_2SO_4 + H_2O$.

HYPODERMIC TABLETS—COCAINE HYDROCHLORIDE.

Dissolve not less than 20 tablets in sufficient distilled water to make 100 cubic centimeters and take an aliquot equivalent to at least one grain of cocaine hydrochloride. Make the aqueous solution slightly alkaline with ammonia and shake out with several portions of ether until the aqueous layer is shown to be completely exhausted of alkaloid, using Mayer's reagent for the test. Combine the ether extracts and evaporate the major portion of the ether on the steam-bath, finally allowing the remainder to be dissipated at room temperature. Dissolve the residue in a few cubic centimeters of neutral alcohol. Add 10 cubic centimeters of $N/20$ sulphuric acid, and titrate the excess of acid with $N/50$ potassium hydroxide, using

methyl red indicator. Each cubic centimeter of $N/20$ sulphuric acid corresponds to 0.016983 gram of cocaine hydrochloride, $C_{17}H_{21}O_4NHCl$.

HYPODERMIC TABLETS—CODEINE SULPHATE.

Dissolve not less than 20 tablets in sufficient distilled water to make 100 cubic centimeters and take an aliquot equivalent to at least one grain of codeine sulphate. Make the aqueous solution alkaline with ammonia and shake out with several portions of chloroform until the aqueous solution is shown to be exhausted of alkaloid, using Mayer's reagent for the test. Evaporate the combined chloroform extracts to dryness on the water-bath, and dissolve the residue in a few cubic centimeters of neutral alcohol.

Add 10 cubic centimeters of $N/20$ sulphuric acid and titrate the excess of acid with $N/50$ potassium hydroxide solution, using methyl red indicator.

Each cubic centimeter of $N/20$ sulphuric acid consumed corresponds to 0.019663 gram of codeine sulphate, $(C_{18}H_{21}O_3N)_2H_2SO_4 + 5H_2O$.

HYPODERMIC TABLETS—MORPHINE SULPHATE.

Dissolve not less than 20 tablets in sufficient distilled water to make 100 cubic centimeters and take an aliquot equivalent to at least one grain of morphine sulphate. Make the aqueous solution slightly alkaline with ammonia and shake out six times with a mixture consisting of three parts of chloroform and one part of alcohol.

Evaporate the combined extracts to dryness on the water-bath and dissolve the residue in a few cubic centimeters of neutral alcohol. Add 10 cubic centimeters of $N/20$ sulphuric acid and titrate the excess of acid with $N/50$ potassium hydroxide.

Each cubic centimeter of $N/20$ sulphuric acid corresponds to 0.018962 gram of morphine sulphate, $(C_{17}H_{19}O_3N)_2H_2SO_4 + 5H_2O$.

HYPODERMIC TABLETS—STRYCHNINE SULPHATE OR STRYCHNINE NITRATE.

In case of tablets containing $^1/_{20}$ grain of strychnine sulphate or strychnine nitrate or in excess of this amount, dissolve at least 20 tablets in sufficient distilled water to make 100 cubic centimeters and take an aliquot equal to at least one grain of strychnine sulphate or strychnine nitrate.

In case of tablets containing less than $^1/_{20}$ grain, dissolve a sufficient number to represent at least one grain of strychnine sulphate or strychnine nitrate in sufficient distilled water to make a clear solution.

In either case make the aqueous solution distinctly alkaline with ammonia and shake out with several portions of chloroform until tests with Mayer's reagent indicate that the aqueous solution has been completely exhausted of the alkaloid. Evaporate the combined chloroform extracts to dryness on the water-bath. Dissolve the residue in a few cubic centimeters of neutral alcohol. Add 10 cubic centimeters of $N/20$ sulphuric acid and titrate the excess of acid with $N/50$ potassium hydroxide solution, using methyl red indicator.

Each cubic centimeter of $N/20$ sulphuric acid consumed corresponds to 0.021414 gram of strychnine sulphate, $(C_{21}H_{22}O_2N_2)_2H_2SO_4 + 5H_2O$, or 0.01986 gram of strychnine nitrate, $C_{21}H_{22}O_2N_2HNO_3$.

THE PREPARATION OF METHYL ACETYLENE.*

BY M. W. TAPLEY AND P. M. GIESY.

The best method given in the literature for the preparation of acetylene and its homologues appears to be the conversion of the alkyl dibromides into the corresponding members of the acetylene series by the action of alcoholic potassium hydroxide. No reference was found giving the preparation of methyl acetylene by this method. The preparation of the higher homologues in this way required heating under pressure to remove the second molecule of hydrogen bromide. It was thought, however, that since methyl acetylene was a gas it ought to be possible to prepare it from propylene dibromide by heating the latter with alcoholic potassium hydroxide without having to resort to high pressures.

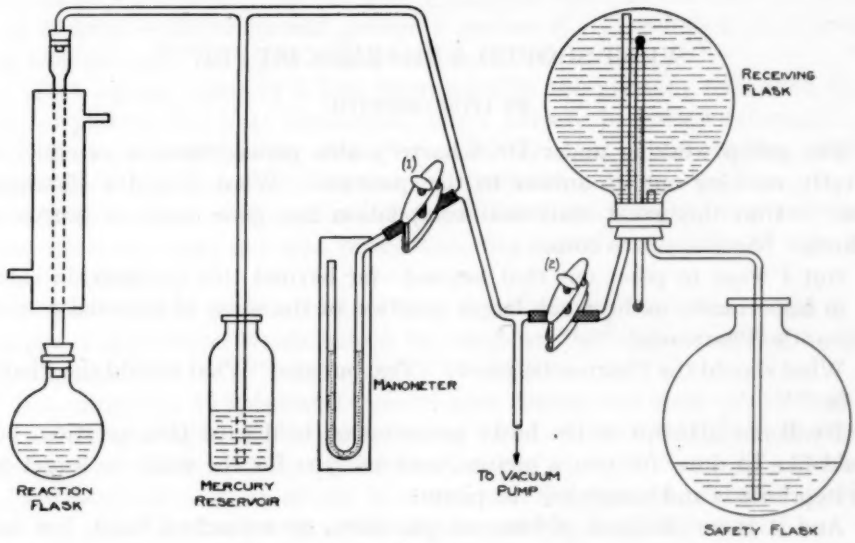

Fig. 1.

To increase the reaction temperature the potassium hydroxide was dissolved in *n*-butyl alcohol instead of ethyl alcohol as is ordinarily done. Figure 1 is a diagram of the apparatus used, which provides for a yield determination as well as for the collection of pure material for analysis and further use.

In making a run the receiving flask and tubes are filled with water, the screw clamp (2) is closed, and the tube leading to the safety flask immersed in water in the latter flask. Twenty grams of propylene dibromide in the reaction flask is then treated with an excess (25 grams) of potassium hydroxide dissolved in the minimum amount of butyl alcohol. The apparatus is then gradually evacuated and when the mercury in the manometer is pulled up to the screw clamp (1), the latter is closed. The mercury in the reservoir rises in the safety tube and finally reaches a height of about 71 cm. At this stage the reaction mixture is in a state of slow ebullition. When the alcohol vapor has displaced all air from the apparatus,

* Read before Scientific Section, A. PH. A., Des Moines meeting, 1925.

the line to the vacuum pump is closed and the reaction flask gently heated. As pressure is built up, the mercury in the tube is forced back into the reservoir. When the pressure has risen to that of the atmosphere the manometer screw clamp (1) is opened, then clamp (2), next to the receiving flask, and collection begins. The volume of gas formed is calculated from the increase of weight of the safety flask, the volume of the evacuated apparatus, and the pressure within this. This method of preparation gives a 67% yield of methyl acetylene of practically 100% purity. For every 10 grams of propylene dibromide used approximately 800 cc. of methyl acetylene is produced.

As methyl acetylene is quite soluble in water a saturated salt solution is recommended for the confining liquid.

LABORATORIES, E. R. SQUIBB & SONS,
BROOKLYN, N. Y.

WHAT SHOULD A PHARMACIST "BE"?*

BY IVOR GRIFFITH.

The group working under Dr. Charter's able management is carefully and correctly working out its answer to the question—"What should a Pharmacist know?" Into this great statistical compilation has gone years of search and research. More is yet to come.

But I want to point out that beyond—far beyond this question, in essence and in importance, is the much larger question of the sense of personal responsibility of the Pharmacist.

What should the Pharmacist know? Yes, but also "What should the Pharmacist be?"

I will not attempt in the hasty presentation to discuss this question, but I should like to draw for you a picture, and ask you for the while to forget your own impressions and simply see the picture.

And it is no idealized picture, no phantasy, no retouched freak, but taken truly, clearly and without distortion out of realities of Life's everyday.

It is given in a personal way since it is, without bias or exaggeration, the spreading out in prose of a very personal experience. Listen and think.

"Illness had paid me a visit—a most serious, painful visit, and I was carried for my first experience, to the great brick building housing the community hospital. Too sick for expression, too weak for protest, lost to everything except the stubborn, innermost hope that with God's grace health would come back again, I was moved silently through the halls of the house of mercy into the segregated chambers of the serious or hopeless cases. And I knew my destination, for the hospital to me was an open book. I had served long as its pharmacist, compounding its medicines, teaching its nurses and coöperating with its medical staff in many substantial ways.

* Presented before Section on Practical Pharmacy and Dispensing, A. PH. A., Des Moines meeting, 1925.

EDITOR'S NOTE: This is an interesting presentation of what a pharmacist should "be," and impresses the responsibilities of pharmacists. It is a message that may well be impressed on students and pharmacists.

"Sick, though my body and mind were, I sensed in silence the dark and uncomforting inference that I was bound for the quarters which were dedicated only to those whose lives were in the balance; to those who were parting from a real world, a most enjoyable comfortable, friendly world, into the Land whence none return—I sensed to my lonely self that they had sent me there to slip away in sacred silence.

"And not a word of my thoughts could find expression.—It was a loneliness too deep, and a gradual leaching out of life, that was far too feelingful and far too understandable ever to find expression. I was sick unto death.

"The panorama moved and I watched it, quietly and from a far, narcotic distance. The specialist had finished his survey, and unmindful of my absolute grasp of every detail of word and deed, asked the intern if a certain very powerful drug was then available. An affirmative response was that the Pharmacist there in the hospital could easily and promptly prepare it. Somehow a great comfort came over me then, but along with it a sence of keen anxiety.

"This internal comfort I first interpreted as the pleasant relaxation that I knew to precede the final dissolution, but I naively bargained internally, sick though I was, and sold to my aching heart the idea that it was not that comfort, but another which was more real and substantial."

Said Hope, the conjurer, "In able hands lies your destiny, Trust and rest in perfect assurance that this man of medicine has solved your case and now deals out his panacea."

It was aconitine in combination that the physician had ordered, and it was its unusual application which helped to clinch my faith in my doctor's ability and judgment.

But came then an ephemeral sense of keen anxiety and there ran through my mind a chilling array of conflicting emotions. I knew the drug—I had long learned of its potent actions and its queer eccentricities. I knew it must be most exquisitely prepared lest its action be impaired. I knew its profound toxicity. I feared it might not be exactly as the doctor would have had it for me.

But I knew the hospital pharmacist—I had confidence in his every judgment. I knew his sublime code of service, his exacting methods and his unremitting sense of responsibility. I knew that the doctor's prescription would be compounded by him exactly as written, every ingredient safe as to its identity and its potency, and the whole blended with scientific judgment into a powerful instrument of healing.

If the doctor's judgment was exact and right, I knew that the pharmacist's part in the contract would be precisely fulfilled and my anxiety took wing and the great comfort took complete possession of my weak and ailing heart.

From that moment on Life took a new direction. It rallied its parted forces to a great concentration and slowly but as certainly worked to the end that not yet must it leave this temple. And with the passage of time health soon repossessed its inheritance.

There is your picture.

It is real. It is every day. Need there be now an answer to my question "What should the Pharmacist be?"

DEPARTMENT OF BUSINESS MANAGEMENT

Conducted by Paul C. Olsen.*

BUILDING A MARKET FOR YOUR OWN PREPARATIONS.

A DRUGGIST LEARNS A PRACTICAL PLAN FOR PROMOTING ONE OF HIS OWN PRODUCTS.

John Marsden's store had long enjoyed an excellent reputation among physicians and their patients. His professional interest in pharmacy had led him to make numerous laboratory experiments. Out of one series of these experiments had resulted a stable alkaline emulsion which he believed had excellent possibilities. Inquiry among his physician friends confirmed this belief. (These few preliminary words can hardly give an adequate representation of the months of patient experimenting which after many trials resulted in a product which met Marsden's high professional standards. It is outside the scope of this article to detail his manufacturing problems. Sufficient to say that they had to be satisfactorily solved before promotive activities could begin.)

Marsden persuaded some of his physician friends to try his new preparation. They reported good results, and soon prescriptions for it began to come in almost daily from the little circle of his medical acquaintances. Marsden was satisfied at last that he was on the right track, but he also realized there was a long distance yet to travel to ultimate success.

Here he wisely called in outside assistance. He reasoned this way—When I am sick I go to a doctor. I know the result I want him to accomplish for me—make me well. The methods he pursues to accomplish this result are medical technique which are out of my field. The same way with this problem. I know the results I want to get—more sales of this preparation. The technique of increasing sales of a proprietary preparation is outside my field. I will call in an expert and let him get for me the results I want.

The expert came. He asked innumerable questions, some pertinent and some which seemed impertinent. He spent hours in the laboratory, apparently staring vacantly at the various production processes. He borrowed Marsden's Pharmacopœia and studied the properties of the various ingredients of the preparation. Marsden heard he spent some time talking to doctors to get, independently, their views on the new preparation.

In a week he returned smilingly with a neat brown portfolio under his arm. Marsden told his head clerk not to disturb him for the rest of the morning and the two repaired to the laboratory.

"Why, what's that?" inquired Marsden in surprised tones, as the advertising man opened his portfolio.

"That's a sketch for a label," answered the advertising man casually. "What do you think of it?"

"Pretty fine, but say, if I use a label like that people will think I am in a class with large well known pharmaceutical manufacturers."

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* Instructor of Merchandising, Wharton School of Finance and Commerce, University of Pennsylvania; Lecturer on Business Administration, Philadelphia College of Pharmacy and Science.

"It's all true, isn't it? If you don't think well of your goods, you can't very well expect anyone else to, can you? You must inspire confidence."

Marsden's enthusiasm began to grow. "What's this?" he said, as he picked up a letter typewritten on one of his own letterheads.

"That's a sample of a circular letter to send to physicians to introduce your preparation to them."

Marsden read it. "That's certainly a 'jim dandy.' I see now why you spent all that time snooping around the laboratory and pouring over my Pharmacopœia. Nothing stereotyped or canned in that letter. It certainly ought to bring in the business. Why, I bet 2 out of 3 physicians who get that will answer it."

"I'm afraid not. As a matter of fact, if you get replies from 5 out of a hundred the letter is doing remarkably well. That letter is just a plain statement of the uses and advantages of your preparation, and has inclosed with it a return envelope and a little card on which the physician can request a free bottle for trial. Every doctor in this town gets ten to twenty circulars in his mail every morning and a letter like this has a lot of competition to attract enough attention to get an answer."

"But if 95 out of every hundred of these letters go in the waste basket, isn't that an awful waste of stationery and postage?"

"Not necessarily. These letters will cost you, including stationery, multigraphing, addressing and postage about $5.00 a hundred. Now, the question is, is it worth $5.00 to you to get 5 physicians interested enough in your preparation to write for a trial bottle of it?"

"I see the point. There are some physicians in this town it would be worth $50 to me to get interested. Let me ask you a few questions. Do you put stamps on those return envelopes?"

"No, because if a doctor is interested enough to put his name on the card he is interested enough to reach in his desk drawer and get a stamp for the envelope."

"Wouldn't postal cards be cheaper?"

"Yes, but many physicians object to broadcasting to the postman, their office assistants and your clerks that they are writing for a free sample. They prefer a sealed envelope."

"Where will you get the names to send these letters to?"

"We can start out with the 500 physicians here in town; their names are all classified in the telephone book. If you get 5 or 6 per cent returns here in town, you can depend on the law of averages to bring you about the same results in other sections. If you don't get enough results to pay, your trial has only cost you $25 and you can then test out another appeal on a different list of 500. That's the advantage of starting in a small way."

"What else will I need to do?"

"First, you want to capitalize all you can the interest of the doctors who write for trial bottles. I have here a sample of a letter which you might send out about 2 weeks after you send him the trial bottle. If he has used the bottle that may bring back a valuable report which you can use (*if he gives his permission*) in getting the interest of other physicians. If the doctor put your bottle on a shelf in his closet and forgot about it your letter of inquiry will politely call it back to his mind and perhaps interest him enough to use it."

"Second, you know as well as I do that a doctor has to be kept constantly re-

minded of a preparation if he is going to continue to prescribe and recommend it. This is only natural. These days there are so many new preparations being brought out and so many new ideas that a doctor has difficulty in keeping up with all of them. Yet you can't afford to harass or annoy him with your claims. I suggest that you mail monthly a blotter which has printed on it one or two important advantages or uses of the preparation. Here are some samples. Few people throw away a blotter because it is useful. In that way you keep your name before him.

"In the case of physicians who apparently ignore your first letter you will find you will get almost as great a response month after month as you did from the original letter, if you inclose with the blotter a return envelope and a card on which he can ask for a trial bottle.

"One benefit you will receive from this propaganda is that physicians who never knew of you before will become acquainted with your store and your entire business will benefit. Eventually, however, you will have to get other stores to carry your preparation to satisfy the demand which you create for it. The easiest way to do this is to telephone the druggists you know best and tell them whom you have detailed in their neighborhood. Any druggist will lay in a small stock of an article if he is assured there is going to be a demand for it and not left with dead stock on hand. You can talk the same way to the wholesale houses.

"Fourth, you can capitalize this widened distribution by writing to doctors in the neighborhood of each store you sell and tell them the name of the store. You will notice in this letter that there is also a request for him to suggest additional stores. Very few druggists will refuse to stock an article that a doctor asks him to carry provided he feels certain the doctor intends to prescribe the preparation."

"This all sounds very fine," said Marsden when the advertising man had finished, "but what's it all going to cost?"

"Just as much or as little as you want it to. You are making a living from the store now, so I would suggest that for the next couple of years you put back into this preparation all you take in on it. In this way as your sales increase you can gradually extend your detailing and with it your distribution. In two or three years you will be in a strong enough position to begin safely to draw some of the profits which have begun to accumulate because you have built upon this solid foundation."

Strict, unfaltering observance of the code of ethics at all times should be a prime essential in all undertakings promoted by pharmacists.

QUESTIONNAIRE FOR INVESTIGATION OF A MANUFACTURING ESTABLISHMENT.

Through the courtesy of a prominent manufacturer the JOURNAL is enabled to publish a questionnaire which is used as a basis for estimating the financial strength and future earning power of a pharmaceutical, proprietary, toilet or sundry article and of the establishment producing the preparation under consideration.

1. When started.
2. Capital invested at beginning. If cash or property, amount of each.
3. Additional capital paid in. If cash or property.
4. Partnership or Corporation.
   (*a*) If Corporation, state where incorporated.
   (*b*) Present capitalization.
5. Tangible assets

A.—Building and Ground.

1. Size.
2. Stories high.
3. Total floor space.
4. Value conservatively estimated.
5. Has building been appraised; if so, give date and value.
6. Location of. If good neighborhood.

B.—Equipment.

1. Office.
   (*a*) Condition of.
   (*b*) Estimated value.
2. Factory.
   (*a*) If antiquated or new.
   (*b*) Estimated usable.
   (*c*) What portion permanent, moving cost of which would about equal or exceed value. This includes such items, as shafting, built in conveyors, electric dummy elevators, etc.
3. Motor or horse trucks or vehicles, if any.
   (*a*) Condition of.
   (*b*) Estimated value of.
4. Cost of all equipment as shown on books.
5. Cost at which carried on books.
6. Is usable value equal to book value.
7. Has company an appraisement of equipment. If so, give date and value.

C.—Merchandise.

(*a*) Raw material.
   1. Inventory value of.....date.
   2. Condition of.
      (*a*) Quantity if any of deteriorated or of doubtful value.
   3. Has there been a great depreciation or advance in value of any items of which there is a substantial quantity on hand.
   4. Is stock fully worth value at which carried on books.

(*b*) Finishing material.
   1. Inventory value of.....date of.
   2. Condition of.
      (*a*) Quantity, if any, discontinued or obsolete.
   3. Has there been a material change in price either higher or lower over price paid.
   4. Is stock fully worth value at which carried on books.

(*c*) Finished stock.
   1. Inventory value of.....Date.....
   2. Condition of.
      (*a*) State quantity if any of deteriorated or doubtful value.
   3. Have costs of production changed materially, in last 2 years.
   4. Does replacement cost exceed cost at which produced or carried.
   5. Is stock fully worth value at which carried on books.

D.—Accounts Receivable.

1. Amount of.....Date.....
2. Kind.
   (*a*) Retailers.
   (*b*) Jobbers.
3. If any large single accounts.
4. If any large credit balances or advance payments.
5. If freight prepaid or allowed when remitting.
6. Are collections followed up closely.
7. Amount of suspense account if any.
8. Amount past due if possible to state.
9. Are suspense accounts included in total or stated as separately in financial statements and on this report.
10. Method of bookkeeping used. Single or double entry.
11. Are monthly trial balances taken and monthly statements made.
12. Are balances forced.
13. Terms of sales.
    (*a*) Cash discount.
    (*b*) Time due net.

E.—Products, Manufacturing.

(*a*) If few—name.
(*b*) If many supply printed or other list.
(*c*) Give yearly sale of principal item or items.
(*d*) Give cost of principal item or items.
(*e*) If not self evident give use of items.
(*f*) Market possibilities of principal item or items.
(*g*) No products deteriorate with age.
(*h*) Additional data and comments discovered by investigations which buyer should know.

F.—Advertising.

1. Amount of annual advertising by year since beginning of company or for last five years.
2. Kind of advertising.
   (*a*) Magazine.
      1. Amount if any, in dollars.
   (*b*) Newspapers.
      1. Amount if any, in dollars.
   (*c*) Bill boards.
      (*a*) Amount if any, in dollars.
   (*d*) Painted signs.
      (*a*) Amount if any, in dollars.
   (*e*) Window displays.
      (*a*) Amount if any.
   (*f*) Samples.
      (*a*) Amount if any.
   (*g*) Miscellaneous advertising.
      (*a*) Kind if any.
      (*b*) Amount spent if any.
   (*h*) Additional data and comments by investigator.

G.—Sales Force, if any.

1. How long in existence.
2. If a special sales manager.
3. Number of regular salesmen.
4. How paid.
   (*a*) Straight salary.

(*b*) Salary and expenses.
(*c*) Commission salesmen.
(*d*) Pay own expenses.

5. Average monthly sales per man.
   (*a*) To jobbers.
   (*b*) To retailers.
6. Average cost per man.
7. Total cost.
8. Demonstrators.
   (*a*) Number.
   (*b*) How paid.
      (*x*) Straight salary.
      (*y*) Salary and commission.
   (*c*) Total cost of.
9. Number of women travelers, if any.
10. Any indications goods are drag on market.
11. Additional data and comments by investigator.

H.—Sales Policy.

(*a*) Any effort to maintain retail prices.
(*b*) If sold exclusively to retailers.
(*c*) If sold exclusively through jobbers.
(*d*) If sold direct to both jobbers and retailers.
(*e*) Free deals.
   (*x*) To retailers.
   (*y*) To jobbers.
(*f*) Trade discount.
   (*x*) To retailers.
   (*y*) To jobbers.
(*g*) State if jobber is given both free goods and trade or jobbing discount.
(*h*) State if retailer is given both free goods and trade discount or if he only has choice to take either free goods or trade discount but not both.
(*i*) Does sales policy include leading retailer or jobber or both.
(*j*) Additional data and comments by investigator.

I.—Finished Stocks.

(*a*) Is any carried in warehouses in different cities.
(*b*) If so, state where and amount carried, also basis of cost.

J.—Sales.

1. For year since beginning or previous five years.
2. Are sales given, gross or net.
3. If gross, state discounts or other deductions made by buyers.
4. State sales.
   (*a*) To jobbers.
   (*b*) To retailers.
5. Are goods sold to department stores.
   (*a*) If so, to what extent.
   (*b*) If possible state amount.

K.—Good Will, Formulas, etc., and Other Intangible Assets.

1. State amount at which carried on books.
2. State if developed by company or if acquired through purchase.
3. If acquired in part or whole by purchase, state price paid.
4. Additional data and comments by investigator.

L.—Summary of Impressions Gained by Investigator.

M.—Foreign Branches.

1. What countries.
2. What city located.
3. Capital each.
4. Tangible assets each.
5. Sales per year last 5 years of each.
6. Give names of countries where trade marked.
7. Above are recapitulation figures.

Fill in as far as possible this entire questionnaire for each branch.

N.—Additional Data Not Requested in this Questionnaire Noticed by Investigator Which Buyer Should Know.

COMMENTS, QUESTIONS AND SUGGESTIONS ARE WELCOME.

Readers are invited to submit comments, criticisms and suggestions regarding the material which appears in this department. The editor will also undertake to answer questions regarding general problems of business management. Letters of general interest will be published, but the writer's name will not be revealed without his permission.

SEASONABLE DISPLAYS FOR FEBRUARY AND MARCH.

Surgical goods and sick-room supplies.
Dental supplies.
Olive oil.
Telephone order business.
Shampoos and hair tonics.
Castile soap.
Face creams, lotions and powders.
Easter perfumes, toilet waters and sachets.

A COMPARATIVE STATISTICAL STUDY OF THE NUMBER OF REGISTERED PHARMACISTS, OF DRUG STORES AND OF HOSPITALS OF TWENTY-FIVE OR MORE BEDS' CAPACITY.*

BY HENRY J. GOECKEL.[1]

The objective of this investigation is to show, if possible, on the basis of supply that a large percentage of the hospitals in the United States do not employ registered or qualified pharmacists to compound and dispense and to have general supervision over the drug supplies of these institutions. Incidental objectives are to call attention to the need for developing this branch of pharmaceutical service, to learn how many registered pharmacists there actually are and how this number compares with the total number of pharmacies, hospitals of more than twenty-five beds' capacity and with the total population.

The excellent statistical study on the number of drug stores and the relation to populations of the various states, etc., by W. F. Rudd,[2] presented at the last

* Read before Section on Practical Pharmacy and Dispensing, A. PH. A., Des Moines meeting, 1925.

[1] Consulting Pathologist, Somerset Hospital, Somerville, N. J.

[2] W. F. Rudd, JOUR. A. PH. A., p. 1153 (December 1924).

meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION, covered this phase of the subject in a very thorough manner.

The writer has used the figures for 1923, as they are the most recent and thorough statistics available which will permit a reasonably accurate comparative study of value. It was ascertained that thirty of the states have annual registrations which makes their data of the most value, three states have bi-annual registration, one has tri-annual registration, seven have no periodic registration and eight did not publish sufficient data to be of much value in this study. The data secured from various sources is given in Table I, columns 1, 2, 3, 4, 8 and 9; columns 5 and 6 present data calculated from this by the writer.

An attempt was made to learn the average number of registered pharmacists employed in pharmacies, from persons much interested in State Boards in the East. As the replies stated that no such tabulation had been attempted or was possible with present data the writer tabulated a series of stores with which he is personally acquainted and decided that an average of one and a half per store is a conservative figure to use in determining the number of registered pharmacists employed in the retail drug trade. The figures given in column five were obtained by multiplying the number of drug stores in each state by this factor. Subtracting these from the total numbers of resident pharmacists in each state gave the figures tabulated in column six. It will be noted that ten of the states show negative numbers.

As it is necessary to be reasonably sure of the accuracy of the data used if results are to be of any value, the writer scrutinized the published data very carefully and concluded that much of it is more of a rough guess than an actual careful statistical tabulation, especially the data given in columns two and three. Columns one and four are probably correct. The hospital data is the result of a careful census.[1] The tabulation of the total number and the division into non-resident and resident pharmacists not being given by New Jersey the writer, possessing a copy of the directory issued by the New Jersey State Board under date of January 1924, compiled these statistics. The results are found on line 32 of Table I.

In studying the published figures those for Idaho, Missouri, Wyoming and New Hampshire seemed to be the results of very careful mathematical tabulation. These figures therefore were used with those from New Jersey to obtain an average figure for the percentage of total who are non-residents of the states. As these states were well distributed they were very good for this purpose. The result is an average of 31.4 per cent, as shown in Table II. It is desirable to have approximately correct figures for this, as otherwise the statistics will be very much padded and show more than 20,000 more registered pharmacists than there actually are. As an example, the writer being registered in three states appears three times in the list. As the majority of non-resident pharmacists are registered in the state where they reside, deducting the non-resident numbers from the totals will give the approximately correct number of registered pharmacists in the United States. To test the validity of this average percentage factor all of the first thirty-four States' total figures for registered pharmacists were used to calculate the probable number of non-resident pharmacists in each state. To permit a ready comparison the published figures also are given, in Table III. It will be noted at once that

[1] By Council of Medical Education and Hospitals, *Jour. A. M. A.*, V. 82 (January 12, 1924).

the figures published by the states having the lesser numbers of pharmacists, in most instances, compare favorably with the average figure while those states with many thousands of registered pharmacists on their lists present figures which suggest a guess at the number of non-residents. As the writer believed that the figures obtained in Table III will come nearer being correct than those in Table I, he has used the former for the purpose of this study.

TOTAL NUMBER OF REGISTERED PHARMACISTS.

Using the totals so obtained in the states publishing complete data as a basis by the rule of three a fairly accurate estimate can be made of the total number of persons actually registered.

Total number of resident pharmacists in the 34 tabulated states.....	48,705
Total number of drug stores in these states.....	32,518
Total number of drug stores in the rest of the states.....	20,452

48,705:32,518::X:20,452; X equals 30,633 in the states 35 to 49. 48,705 plus 30,633 gives 79,338 as the total number of persons holding registered pharmacist certificates, an average of 1.497 per drug store.

COMPARISON OF AVAILABLE REGISTERED PHARMACISTS AND DRUG STORES IN THE VARIOUS STATES.

The figures obtained would tend to show that many states have scarcely more registered pharmacists than there are drug stores. Some actually have less. Considering the hours that the majority of stores are open, this would suggest that either the registered pharmacists are employed too many hours for the maintenance of their health or to conserve the best interests of society, or that many are very poorly manned. It certainly tends to show that the hospitals in these states cannot be making strong demands upon the supply of pharmacists.

COMPARISON OF HOSPITALS TO SUPPLY OF REGISTERED PHARMACISTS.

By the conservative figures of the Council on Medical Education and Hospitals, we find the following:

Total number of hospitals of 25 or more bed capacity.....	4,006
Total number of patients—average per day.....	528,686
Average number of patients per hospital per day.....	132

Any one who has had experience in a hospital where pharmacy is actually practiced will be quite willing to admit that this average number of patients will not leave much time for loafing. Where there is also a busy clinic a hospital of that size would require at least two pharmacists. In the hospital in which the writer in past years was a pharmacist, with an average housing of about 160 patients and a busy clinic, it took all of the time of three registered men and a porter to give good service.

If to this group of 4006 hospitals which, if properly served pharmaceutically, should require at least 5000 pharmacists we add the total numbers of registered men who are not engaged or available by reasons of other forms of employment, it

does not look as if there was an excess of registered pharmacists in the very recent year 1923. Pharmacists not available would include all holding certificates but retired, engaged in teaching, in the U. S. Army, Navy or Public Health Service, all engaged in the pharmaceutical, chemical and other lines of manufacturing, in other retail or wholesale business, and those holding certificates but now practicing medicine or engaged in laboratory activities.

REMARKS.

In selecting statistics for the preceding study the writer took the figures of the Council on Medical Education and Hospitals of the American Medical Association because they are the most conservative and take in only institutions relative to which there can be no question of the propriety of adequate pharmaceutical supervision. This tabulation was considered more satisfactory than that of the "Modern Hospital" or of the United States Public Health Service as these include sanatoriums and hospitals for nervous and mental diseases. The total number of hospitals by the American Medical Association classification is 6830. The United States Public Health Service census figures for 1922, including sanatoria and institutions for the mentally diseased, feeble minded and epileptic, are 11,522.

As the care for the last three types of patients is now as much of a medical as a housing and segregating proposition, most of these could properly be classed with institutions requiring the services of pharmacists for the proper discharge of their obligations to the public.

The writer wishes, before summarizing, to acknowledge the assistance of the Director of the Hospital Library and Service Bureau in furnishing the data on hospitals and to Secretary H. C. Christensen, of the National Association of Boards of Pharmacy, who furnished the writer with a copy of the data compiled by E. L. Newcomb, published in the *Northwestern Druggist*, September 1923, and for the data on which was based the arrangement of the states on the basis of intervals of registration.

SUMMARY AND CONCLUSIONS.

Data is presented showing that there were about 79,338 persons in the United States registered as pharmacists—an average of 1.497 for each of the 52,970 drug stores. Deducting those engaged in other lines of activity will greatly reduce this average number.

Considering the hours that the average drug store is open to serve the public, it would appear that the average pharmacist either spends too many hours at his vocation or that many of the drug stores in the United States are not at all times under the supervision of registered pharmacists.

It is evident from the statistics that many of the hospitals cannot be employing registered pharmacists. The hospitals of the United States for the proper discharge of their obligations would require the services of more than 5000 pharmacists.

The data presented in this paper show, if the number of drug stores is not excessive, that the supply of registered pharmacists is not excessive, which is significant when we compare this with the large classes at our colleges.

It was deemed unnecessary for the purposes of this paper to compare the number of registered pharmacists with the population of the states as this can readily be done if desired by using these data and those of the article by W. F. Rudd.

The proper manning of hospitals pharmaceutically will aid in advancing the professional status of pharmacy as it has that of medicine, dentistry and nursing, and will benefit the profession in general as well as the public by proper pharmaceutical service where it is of educational value to both the medical profession and to pharmacy.

TABLE I.—STATES WITH ANNUAL REGISTRATION.

	State.	Registered Pharmacists. Totals.	Non-resident.	Resident.	Stores.	Reg. pharm. employed × 1.5.	Excess.	Hospitals 25 or more beds.	Bed capacity.	Daily average patients.
1	Alabama	1,045	155[a]	890[a]	675	1,012	−122	47	6,161	4,265
2	Arizona	415	100	315	125	187	128	35	3,262	2,224
3	Arkansas	1,000	300	700	1,000	1,500	−800	37	4,832	3,490
4	California	8,200	100	8,100	2,750	4,135	3,965	219	36,231	26,391
5	Colorado	1,960	300	1,660	950	1,425	235	63	10,902	7,861
6	Connecticut	1,375	150	1,225	640	960	265	55	11,596	9,460
7	Florida	1,022	400	822	646	969	−147	9	1,063	783
8	Idaho	684	252	432	290	435	− 3	21	2,172	1,575
9	Illinois	6,000	500	5,500	3,000	4,500	1,000	270	50,678	31,463
10	Indiana	3,964	200	3,764	1,418	2,127	1,637	97	17,018	12,481
11	Iowa	4,500	500	4,000	2,200	3,300	700	103	14,882	11,457
12	Kansas	2,150	250	1,900	1,600	2,400	−500	73	9,743	7,417
13	Kentucky	1,850	275[a]	1,575[a]	860	1,290	285	62	10,237	7,829
14	Louisiana	1,840	200	1,640	862	1,293	347	44	8,745	6,984
15	Minnesota	2,150	400	1,750	1,050	1,575	175	113	19,843	15,268
16	Missouri	5,185	1,556	3,629	2,238	3,357	272	119	20,909	16,821
17	Montana	687	300	387	320	480	−160	40	4,181	2,803
18	Nebraska	2,000	100	1,900	906	1,359	541	50	7,043	5,455
19	New Mexico	833	500	333	110	162	171	31	3,401	2,439
20	North Carolina	1,000	15	985	802	1,203	−218	88	10,129	6,798
21	North Dakota	625	150	475	350	525	− 50	29	3,395	2,565
22	Oklahoma	2,900	700	2,200	1,239	1,858	342	53	6,332	4,626
23	Oregon	1,400	300	1,100	470	705	395	45	6,886	5,756
24	South Carolina	1,000	150	850	500	750	100	34	6,018	4,048
25	South Dakota	600	250	350	450	675	−225	33	4,045	2,273
26	Tennessee	1,550	230[a]	1,320[a]	800	1,200	120	56	9,077	6,329
27	Utah	376	56[a]	320[a]	121	181	139	11	1,817	1,295
28	Virginia	1,278	200	1,078	736	1,104	− 26	73	12,861	9,227
29	Wisconsin	2,150	215	2,035	1,050	1,575	460	151	19,539	15,083
30	Wyoming	220	75	145	145	202	57	16	1,517	956
	Totals	59,959	8,879	51,080	28,293	40,464	9,083	2,077	324,665	235,422
	States with Bi-annual Registration.									
31	New Hampshire	503	143	360	221	331	39	29	4,452	3,460
32	New Jersey	3,658[b]	1,014[b]	2,644[b]	1,442	2,165	481	124	22,756	17,021
33	Vermont	450	67[a]	383[a]	162	243	140	20	2,353	1,862
	Totals	4,611	1,224	3,387	1,825	2,737	660	173	29,561	22,343

[a]—Calculated by average of all other stated figures. [b]—Tabulated by author from the directory issued by the New Jersey State Board of Pharmacy under date of January 1924.

	State with Tri-annual Registration.									
34	Ohio	4,500	150	4,350	2,400	3,600	750	171	36,365	25,277
	States Having No Periodic Renewal of Registration or Publishing Incomplete Data.									
35	District of Columbia	500	300	200	250	...	...	22	9,157	7,001
36	Maryland	1,000	...	...	550	...	...	75	14,302	10,357
37	Massachusetts	2,800	...	...	1,804	...	...	191	41,493	33,744
38	Michigan	4,627	...	...	1,981	...	...	114	21,232	15,853
39	Mississippi	1,100	...	...	634	...	...	41	6,190	4,229
40	New York	15,000	...	...	5,487	...	...	448	111,010	85,714
41	Pennsylvania	6,000	...	...	3,740	...	...	309	61,162	47,200
	Totals	31,027	...	...	14,446	...	...	1,200	264,546	204,098
42	Delaware	...	...	...	110	...	...	9	1,063	783
43	Georgia	...	...	...	1,095	...	...	57	9,074	7,121
44	Maine	...	...	...	395	...	...	40	5,028	3,885
45	Nevada	...	...	...	46	...	...	9	580	304
46	Rhode Island	...	...	...	324	...	...	25	5,507	3,563
47	Texas	...	...	...	2,927	...	...	117	17,307	12,384
48	Washington	...	...	...	690	...	...	77	11,587	8,549
49	West Virginia	...	...	...	419	...	...	51	7,129	4,956
	Totals	?	?	?	6,006	?	?	385	57,275	41,545

TABLE II.—SHOWING THE PERCENTAGE OF THE TOTAL NUMBER OF REGISTERED PHARMACISTS WHO ARE NON-RESIDENTS OF THE STATE.

State.	Idaho.	Missouri.	Wyoming.	New Hampshire.	New Jersey.	Average.
Percentage of total	36.8	30.0	34.0	28.4	27.7	31.4

TABLE III.—SAME STATES AS IN TABLE I FROM 1 TO 34 WITH NON-RESIDENT REGISTERED PHARMACISTS CALCULATED WITH AVERAGE PERCENTAGE FROM TABLE II. FIGURES FROM TABLE I ARE GIVEN FOR COMPARISON.

	State.	Non-resident. Table I.	Non-resident. Calculated.	Resident.		State.	Non-resident. Table I.	Non-resident. Calculated.	Resident.
1	Alabama	...	328	717	18	Nebraska	100	628	1,372
2	Arizona	100	130	285	19	New Mexico	500	262	571
3	Arkansas	300	314	686	20	North Carolina	15	314	686
4	California	100	2,575	5,625	21	North Dakota	150	190	429
5	Colorado	300	615	1,345	22	Oklahoma	700	911	1,989
6	Connecticut	150	432	943	23	Oregon	300	440	960
7	Florida	400	321	822	24	South Carolina	150	314	686
8	Idaho	252	(215)	(432)	25	South Dakota	250	188	412
9	Illinois	500	1,884	4,116	26	Tennessee	...	487	1,063
10	Indiana	200	1,245	2,719	27	Utah	...	118	258
11	Iowa	500	1,413	3,087	28	Virginia	200	401	877
12	Kansas	250	675	1,475	29	Wisconsin	215	675	1,475
13	Kentucky	...	581	1,269	30	Wyoming	75	(69)	(145)
14	Louisiana	200	578	1,262	31	New Hampshire	143	(158)	(360)
15	Minnesota	400	675	1,475	32	New Jersey	...	(1,014)	(3,658)
16	Missouri	1,556	(1,628)	(3,629)	33	Vermont	...	141	309
17	Montana	300	216	471	34	Ohio	150	1,413	3,087
						Totals		21,525	48,705

Where parentheses are used the original figures were employed in total summary.

THE DEPARTMENT OF THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY

M. N. Ford, President, Columbus, Ohio. J. W. Gayle, Treasurer, Frankfort, Ky. Edw. H. Walsdorf, Chairman of Executive Committee, New Orleans, La. H. C. Christensen, Secretary, 130 N. Wells St., Chicago, Ill.

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Alabama	Iowa	Montana	South Carolina
Arizona	Kansas	Nebraska	South Dakota
Arkansas	Kentucky	Nevada	Tennessee
Colorado	Louisiana	New Hampshire	Texas
Connecticut	Maine	New Mexico	Utah
Delaware	Maryland	North Carolina	Vermont
D. of Columbia	Massachusetts	North Dakota	Virginia
Florida	Michigan	Ohio	Washington
Georgia	Minnesota	Oklahoma	West Virginia
Idaho	Mississippi	Oregon	Wisconsin
Illinois	Missouri	Pennsylvania	Wyoming
Indiana			

(Mr. W. E. Bingham, whose article appears below, has been Secretary of the Alabama Pharmacy Board and active in Board matters for many years and his splendid grasp of Board and National pharmacy needs is evidenced in this article.—H. C. Christensen, *Editor.*).

IMPORTANCE OF N. A. B. P. DISTRICT MEETINGS.

BY W. E. BINGHAM.

Secretary Alabama Board of Pharmacy.

The National Association of Boards of Pharmacy has the machinery, the well-tried plan, the men and the money which, with the right kind of coöperation by the individual member state boards will enable it to perfect an organization that will result in "the greatest good to the greatest number" of our profession in the United States, and the public which we serve. A very important part of that plan is the organization of our member-states into nine districts, the thought back of the districting plant being the welding of the states comprising a district into a harmonious unit of the harmonious whole.

Probably one of the most potentially effective methods of bringing these district states into a position to understand and coöperate each with the other, is the so-called district meeting—the get-together conference planned to be held at some central point within each District at some time between the Annual Conventions of the National Body.

The ideal condition, of course, would be such a meeting attended by all members of each state in the district, but as that is in most cases impossible, the plan of having each state represented by at least two members of each state board is a good one. Such representatives presenting the problems of their own Board and conferring with other Board Members, who in turn seek counsel and exchange experience, can in time bring about real community of thought and genuine co-operation in state board work within their District.

The drawback to the success of this plan lies in the fact that up to the present time this well-distributed representation at District meetings has in only a few

instances been secured. The fault seems to lie not with the Boards or Board members themselves so much as in the difficulty of convincing the administrative powers of the various states of the importance—the necessity of progress. These United States are no longer disinterested units, each pursuing her separate way without regard to the welfare and practice of the profession in her sister states, and just as surely as our professional interests are national, so surely must our ideas of progressive and restrictive conduct be broader than our state boundaries.

One feature which restricts the freedom of development of our profession is the attitude adopted by the political powers in some states. Every man who has ever served on a Board of Pharmacy will admit to himself, if not publicly, that he was not endowed with the qualifications of an ideal examiner, but that it required real study and adaptability. Such being the case, the condition existing in some states under which an examiner is appointed for a short term—sometimes, under the consolidation of boards plan, only from one examination to another—is not conducive to much effort on the part of the examiner by way of preparation, nor the proper feeling of pride and responsibility for the work accomplished.

We put our steadiest, most conscientious effort into the accomplishment which will endure for an appreciable period of time and, I believe, this truly applies to our work on our respective Boards.

And just as our responsibility is increased by each added year we serve, so will our interest in our district meetings be augmented when we know that our tenure of office will continue not only through the planning, but the completion of some of our plans.

The Governors and others charged with the appointment of the various Pharmacy Boards or Pharmacy Examiners will do well to consider this feature when confronted with the privilege of serving through their Board members in the betterment of our profession by means of participation in these district meetings.

It is a true and trite saying, that a person gets out of a lodge, church, or any organization, just in proportion to what he puts into it, therefore, the greater the number of board members in a district who attend the convention, the greater will be the enthusiasm and interest, and the more each Board and Board member will take back to his own State Board.

The District Conventions, being composed of a group of adjoining states, renders the expense and time of little importance compared with the amount of good that can be accomplished by attendance thereon.

Granted then, that well-attended District Meetings are a desirable feature of our progress, it follows that the ideas agreed upon at these meetings should be carried home and put into practice.

Passive assimilation may be better than nothing, but how much more desirable is the aggressive adaptation to our own needs of the experience and wisdom which can be gained through conference and the exchange of ideas, and this should be the key-note of our attitude toward our District Meetings.

EDITOR'S NOTE: Because of the vast expanse, geographically, covered by the National Association of Boards of Pharmacy, the various adjoining states with a community of interest have been organized into nine districts, and through the association of these states within their districts is being developed a better understanding and coöperation throughout the National Association as a whole.—H. C. C.

NEWS ITEMS OF STATE BOARDS OF PHARMACY.

President Ford of the N. A. B. P. has appointed as his Committee on Relations of Boards with Colleges, to work with a corresponding Committee from the Association of Colleges, the following: Chas. J. Clayton, Denver, Col., *Chairman;* Sam C. Davis, Nashville, Tenn.; B. H. Newmayr, Vermilion, S. D.; Ralph C. Root, Brattleboro, Vt., and Guy Norton, Tacoma, Wash.

President Kraus of the American Association of Colleges of Pharmacy has appointed the following as his Committee to work with the Boards: C. B. Jordan, *Chairman;* C. A. Dye, H. M. Faser, C. H. LaWall, and Adolph Ziefle.

Word has been received recently that Arizona and Nebraska have appointed special investigators to check the operation of the various professions in conformity with existing state laws. Such inspection will afford not only much valuable information as to conditions prevalent throughout the states, but will do much to curb violations. Our good friend, Secretary A. G. Hulett, of the Arizona Pharmacy Board, who is planning a personal call on every pharmacy in his state between now and April, reports splendid coöperation on the part of Grocers in the city of Phoenix, where outside supply houses—not the regular wholesale drug houses—had stocked such stores with supplies of iodine, epsom salts, bromide-quinine tablets, etc., the sale of which is legally confined to registered pharmacists. Mr. Hulett reports that all grocers interviewed had removed these articles from sale and appeared to be glad to learn the limitations of their privileges in the handling of drugs, poisons, etc. This is a very encouraging report and we look for other interesting items resulting from Mr. Hulett's personal contact with the business and professional men of his state.

New Jersey.—Secretary Sparks, of the New Jersey Pharmacy Board, notifies us of a change in their law withdrawing the privilege of re-examination without additional fee for those who fail in pharmacy examination. The fee for Assistant Registration has been raised from $5.00 to $10.00.

North Carolina.—The following examination rule was unanimously adopted at the meeting of the North Carolina Board of Pharmacy held at Raleigh, N. C., November 24–25, 1925.

Applicants for license as Registered Pharmacist who can comply with the graduation requirement, but who lack the required practical experience (4 years) or who are under legal age (21 years), or both, may be permitted to take the theoretical or written examination and if successful may take the practical examination later at a regular Board meeting after they can comply with the experience requirement or have become of legal age, or both.

No certificate of said theoretical examination to be issued until the final practical examination is satisfactorily passed. The percentages of the written examinations to be reckoned with the practical and averaged for passing percentage for license to practice Pharmacy, and if satisfactory the certificate or license then to become effective.

Sixteen candidates of the twenty-one appearing at the last Pharmacy examination in North Carolina were successful.

West Virginia.—We note with regret the serious illness of Secretary Alfred Walker, of the West Virginia Board of Pharmacy since 1902, and trust before this reaches the eyes of his friends that Mr. Walker will have entirely recovered. We have been advised of the appointment of Roy B. Cook, of Charleston, to succeed, on the West Virginia Board, Dr. O. O. Older, also of Charleston, whose term expired on June 30th.

Wisconsin.—Friends of Henry G. Ruenzel, of Milwaukee, Wis.—for many years a member of the Wisconsin Board, and Secretary until 1925—will be sorry to learn that on Christmas Eve Mr. Ruenzel was struck by an automobile and his right leg injured. He is improving, however, and expects soon to be up and about.

188TH ANNIVERSARY OF THE FOUNDING OF THE ROYAL COLLEGE OF PHARMACISTS OF MADRID.

Chemist and Druggist of January 2 gives an account of the presentation of Insignia of the Grand Cross of the order of Alfonso XII to Dr. Casares Gil in the Royal College of Pharmacists in Madrid, during the celebration of the 188th anniversary of the foundation of the College. All pharmaceutical associations of Spain contributed towards the purchase of the insignia, as a mark of esteem of this eminent teacher of pharmacy. Dr. Casares Gil has recently been on an official mission to South America for promoting business and professional relations with South American Countries and strengthening the bonds of friendship with the pharmacists of Spain.

THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

(Every Dean of Pharmacy in the American Association of Colleges of Pharmacy is interested in the Fairchild Scholarship and in the examination that is used to select the winner. The following analysis by Dean Rudd is worthy of careful thought. This section of the JOURNAL is open to anyone who cares to discuss this important subject, and I hope that you will avail yourselves of the opportunity.—C. B. JORDAN, *Editor.*)

THE FAIRCHILD SCHOLARSHIP EXAMINATIONS.

BY WORTLEY F. RUDD.*

The annual reports of The Fairchild Scholarship Committee have always interested me greatly. So impressed have I been at the pitiful showing made by the students taking these examinations that I have studied the reports from 1921 to 1925 inclusive rather closely and am submitting herewith some data that has forced me to one of two conclusions, either the examinations are not at all representative or our teaching is sadly in need of reform. This of course is predicated on the assumption that the students taking these examinations represent at least the upper fourth of the freshman class. In my own school we select the best men we have to take the examinations.

The following table brings out the points upon which comment is justified:

Year.	No. schools represented.	No. candidates.	Average grade by subjects. Chemistry.	Pharmacy.	Botany and Materia Medica.	Arithmetic.	General average.
1921	19	31	71.80	39.50	58.50	68.60	64.60
1922	10	14	64.64	74.21	72.57	66.64	70.00
1923	16	24	71.50	80.00	70.00	81.00	75.60
1924	16	24	68.41	64.12	68.27	78.87	70.27
1925	20	33	67.00	77.00	66.00	66.00	70.00
Total		126	68.67	70.96	67.06	72.02	70.00

It is apparent from the above figures that over a five-year period 126 candidates have been unable to average a pass mark (75) on any subject and that the general average on all subjects is only 70. In no year have more than 20 schools had candidates although the prize is worth $300. In no year have the candidates averaged a pass in chemistry or materia medica, 71.8 being the highest in 1921 in chemistry and 72.57 the highest in materia medica in 1922. In two years, 1923 and 1925, pharmacy has averaged more than a pass. In 1923 and 1924 arithmetic averaged better than a pass. In 1921 the average in pharmacy was only 59.5.

Chairman E. G. Eberle has, I know, done everything in his power to make these examinations representative but I believe the whole matter should have careful review at the next joint session of the boards and the college association. A symposium might be arranged that should lead far into the whole problem of proper teaching. This is certainly our chief concern.

* Medical College of Virginia.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Council." —Part of Chapter VI, Article VI of the By-Laws.

Article IV of Chapter VII reads: "each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meetings of the Local Branches shall be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

BALTIMORE.

The December meeting of the Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the Hotel Emerson January 17, Dr. R. L. Swain presiding.

Prof. John C. Krantz, Jr. of the School of Pharmacy of the University of Maryland, spoke on the subject—"The Electrometric Evaluation of Vegetable Drugs."

The importance of physical chemistry as a means of solving pharmaceutical problems was emphasized, and the theory of hydrogen-ion concentration was reviewed. Prof. Krantz discussed in some detail the electrometric method of determining hydrogen-ion concentration and reviewed at length the work of McGill on the electrometric titration of alkaloids. Other work along the same lines originating in the Pharmacy Laboratory of the University of Maryland was discussed, which included a method of determining quantitatively alkaloidal solutions by means of the potentiometer without the aid of alkaline solution for residual titration. This method has been satisfactorily employed in the evaluation of Cinchona, and at the present time effort is being made to make it applicable to other alkaloidal bearing drugs of the Pharmacopœia.

The "Solanaceæ Family"—representing young artists of the School of Pharmacy of the University of Maryland, furnished music for the occasion. The music was quick, spicy and very entertaining; it was the consensus of opinion that the group should have been called the "Piperaceæ Family."

Dr. Samuel L. Hilton of Washington, D. C. will be the speaker at the January meeting of the Branch. Election of officers also will be held at this meeting.

B. OLIVE COLE, *Secretary-Treasurer.*

CHICAGO.

The 155th meeting of the Chicago Branch, AMERICAN PHARMACEUTICAL ASSOCIATION, was held at the School of Pharmacy Bldg., January 8 at 8:00 P.M. The annual meeting of the Branch was called to order with Peter J. Kolb presiding.

The report of the Secretary-Treasurer was presented as follows.

During the year 1925, the Branch has conducted eight meetings, namely, the 147th to 154th, inclusive. These included two meetings in which Cod Liver Oil was the subject of discussion. Dr. Arthur D. Holmes of Boston addressed one of these meetings and Prof. Day, Mr. Harris and Dr. Fantus, the other. Dr. Gladys Dick presented a very able discussion of Scarlet Fever Antitoxin and Dr. Ralph G. Webster a splendid talk on Toxicology. Dr. Richtmann, of Madison, Wisconsin, lectured on Camphor and Dr. C. E. Thorandson on Sponges. The reception to new members at the December meeting combined with an entertainment and refreshments brought out an attendance of 250. The average attendance has been very good.

Due to the several campaigns for subscriptions to the building fund of the A. PH. A. and the free membership to subscribers our annual increase in membership has failed for the first time in a considerable number of years. We have added during the year, 53 new members but have lost 82 members leaving a net membership December 31st of 475. Quite a few of those lost to the Branch moved into other territories and therefore were not lost to the ASSOCIATION.

FINANCIAL STATEMENT.

Bal. on hand, January 1, 1925	$163.52
Contributions	114.50

Commissions	30.00
	$308.02
Printing and postage	105.92
Speakers	17.00
Dinners	10.57
Sundries	21.56
Balance, December 31, 1925	152.97
	$308.02

The report of the nominating committee presented the following names and after the adoption of the report, these nominees were elected to their respective offices:

President, P. J. Kolb
First Vice-President, E. H. Wirth
Second Vice-President, Frances Douglas
Third Vice-President, Samuel Shkolnik
Delegate, Clyde M. Snow
Secretary-Treasurer, E. N. Gathercoal.

The present chairmen of committees were renominated.

The newly-elected President, Mr. Kolb, expressed his thanks for the honor of the office and asked for the hearty support of the members during the ensuing year.

Dean Edward H. Kraus of the University of Michigan, College of Pharmacy, was introduced by President Kolb to address the Branch on the subject of "Some of the Recent Advances in our Knowledge of Crystal Structure." This interesting and very profitable address by Dr. Kraus was well illustrated by the use of the lantern and a number of models. In the discussion that followed the address there was a marked note of interest and even amazement as to the remarkable advance in the knowledge of crystal structure of the molecule that has been obtained during the past 14 years through the use of the X-ray.

A very hearty vote of thanks was extended to Dr. Kraus by the audience.

E. N. GATHERCOAL, *Secretary.*

DETROIT.

The January meeting of the Detroit Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the Wayne County Medical Building, Friday, January 8, 1926, preceded by the usual dinner, which was well attended.

After call to order by President Rowe, the minutes were read by the Secretary and approved.

Treasurer F. F. Ingram, Jr., made a report on the finances of the Branch, as of January 8th, which showed a balance on the right side of the ledger without imposing an assessment upon the members.

President Rowe then read a communication from Ex-President H. V. Arny, A. PH. A., who will address the Branch at the February meeting; plans were formulated to give the speaker a fitting reception. Mr. Lakey then outlined the program for several future meetings as follows: Dr. A. L. Jacoby, City Psychiatrist, will speak on "Crime and Its Cure," at the March meeting, and the May meeting will be held at Ann Arbor at which time Dean Kraus will give a talk on the educational system in Europe. He will just have returned from an extended trip through that country.

Mr. Seltzer then suggested a student program for the open date remaining—the April meeting. This suggestion met with hearty approval.

Mr. Hall made a report for the membership committee. He showed a small gain in the membership of the branch in the last year.

President Rowe then presented Mr. Ingram, who spoke on Shakespeare and his works; he illustrated the value of literature as applied to every-day life.

A general discussion followed, participated in by Messrs. Hall, Webster, Gorenflo, Prof. Tompkins of the English Department of the Central High School, and others.

All expressed the general opinion of the assembly in complimenting Mr. Ingram for his efforts in preparing his highly educational talk. The speaker was given a rising vote of thanks.

BERNARD A. BIALK, *Secretary.*

NEW YORK.

The December, 1925 meeting of the New York Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held on Monday Evening, December 14, 1925 in the Lecture Hall of the New York College of Pharmacy Building.

In the absence of President Hostmann, Vice-President Clyde L. Eddy presided.

Thirty-six members and friends were present.

The minutes of the preceding meeting were read and approved.

Treasurer's Report: Treasurer Gerstner reported $359.96 in the treasury.

Education & Legislation: Mr. Clyde L. Eddy reported in the absence of Chairman Lehman on pending pharmaceutical legislation.

Communications: A letter from the Pharma-

ceutical Conference was read but required no action.

SCIENTIFIC SECTION.

Dr. Robert P. Fischelis presented a talk on "Pharmacy's Message to the Public." An interesting discussion followed.

It was moved, seconded and carried that the act of the Drug Trade Board of Public Information relative to the doubling of the contributions to this board be endorsed and that the Branch shall urge the Board of Directors of the Parent Organization to vote such increase.

A vote of thanks was extended to the speaker.

HUGO H. SCHAEFER, *Secretary.*

PHILADELPHIA.

The January meeting of the Philadelphia Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held Friday Evening, Jan. 8th, at the P. A. R. D. Building, 2017 Spring Garden Street. The meeting was called to order at 8.30 o'clock. President Smith presided. The minutes of the last meeting were read by the Secretary and approved.

As there was no business to come before the branch, the President introduced the speaker of the evening, J. Stanley Probst, Director of Publicity of the Naborhood Stores Association. Mr. Probst spoke on the "Naborhood Druggist" propaganda and gave one of the most interesting talks that the Branch has had for some time, his easy manner and his splendid presentation of his subject keeping the audience at attention every minute.

The story that Mr. Probst outlined seemed to offer many possibilities and suggestions for the present-day pharmacist and the one fundamental point brought out was the fact that with a little coöperation so much can be accomplished. The Secretary feels that the main facts of Mr. Probst's story would be of value and prove of interest to druggists of other communities who might read the Branch minutes and he has taken the following material directly from Mr. Probst's notes:

"For the past two years, street car cards in all Philadelphia surface, subway and elevated cars have been urging 2,500,000 daily passengers to 'Patronize Your Naborhood Druggist' and 'Buy Where You See the Sign'—'The Sign' being the Naborhood Store Emblem which is displayed on the windows of 1258 Philadelphia druggists.

"The cost of the advertising space devoted to the propaganda is $2700 per month, or $32,400 a year. The expense involved in preparing the messages, which are changed monthly, is more than $5000. Other incidentals such as transparencies of the emblem for the Druggists' windows, individual merchandising helps, office overhead, etc., bring the total investment to more than $60,000 annually. If the cost were distributed *pro rata* among the 1258 members of the Association, the *per capita* assessment would be about $47.00, not an inordinate amount, since the Texas druggists spent $50,000 in farm papers alone—and in other lines, larger sums have been paid by retail associations for institutional advertising designed to improve their trade, but in Philadelphia the cost of the 'Naborhood Druggist' propaganda is not distributed *pro rata* among the members of the Association. They do not share any percentage of the expense. The answer to the question: 'Who does pay for it—and why?' will be found in the following brief explanation:

"The Philadelphia Advertising Company controls the advertising space in all Philadelphia cars. A large part of this space is sold to manufacturers whose products are distributed through the retail druggist. It is logical that any improvement in the status of the retail druggists benefits the principal clients of the Philadelphia Advertising Company. It can easily be understood then that this company may profitably finance a plan that has for its ultimate object the promotion of the retail druggists' business. Therefore the entire cost of the 'Naborhood Druggist' propaganda is paid by the Philadelphia Advertising Company.

"The only requirement expected of the members is coöperation. Just as it is manifestly the druggist's advantage to hold his Naborhood Trade, it is equally to his advantage to confine his purchases as far as possible to products that are adequately advertised. Assurance of coöperation is given in a written agreement by which the 1258 members of the Association pledge that they will stock quality products that are street-car advertised and salable in the Naborhood Stores. Thus the honest manufacturers who keep their promises are able to secure retail distribution of their products coincident with their advertising to consumers, and the druggists in turn are protected against purchases of merchandise not adequately advertised. In addition, the Company offers the druggist services of trained

men to prepare circulars, etc., for 'Naborhood' distribution, and others to assist and give help in preparing windows and various displays, all for the betterment and to the advantage of the druggist. The Company maintains a common sense policy of rigidly investigating manufacturers seeking space in the cars, and coöperation of the Association. The good-will of the druggists, acquired at great effort and expense, cannot be jeopardized. There is too much at stake. No questionable products are accepted. The record of the organization is eloquent proof of that.

"The foregoing information answers the questions: (1) 'What is the Naborhood Druggist propaganda?' (2) 'Who pays for it?' and (3) 'Why?' The next question is 'Does it have any appreciable effect on the trade as a whole or on the business of the individual druggist?'

"In styling this advertising as 'propaganda,' we use the word advisedly. It is not designed to sell a certain item, at a given place, at a stated time, for a stipulated price. Its object is to influence public opinion and move public action in the mass. It is not reasonable to expect apparent results within a short time or see tangible evidence of its effect. Ultimately the constant repetition of the slogan 'Patronize your Naborhood Druggist' to 2,500,000 daily passengers in the street cars will affect the buying habits of Philadelphians. It is inevitable that the persistent reiteration of that phrase will make a lasting impression in the public mind. The proposition is fundamentally sound. No one would want to live in his Naborhood if the druggist were not there for emergencies! Obviously, the druggist cannot maintain his store on the sale of medicine exclusively. Only 10 per cent of his business is in medicine. The other 90 per cent is in general merchandise. To enable him to remain in the community his 'Nabors' must buy from him the many things he carries in stock for their convenience and his profit. They owe him that in loyalty. He is 'a friend in need.' He deserves support in fair weather. This appeal is just. It is irrefutable. Broadcasting it to the 2,500,000 daily passengers in Philadelphia street cars is bound to bring results."

At the close of Mr. Probst's talk there was considerable discussion from the floor and a rising vote of thanks was given to the speaker for his interesting presentation.

President Swain, of the P. A. R. D. Association, gave the Branch a special invitation to attend the P. A. R. D. meeting which followed that of the Branch.

The usual dinner of the Branch had been held early in the evening, at the Longacre Hotel. There were about fifty present at the meeting proper and adjournment was made at ten thirty o'clock.

ADLEY B. NICHOLS, *Secretary.*

PITTSBURGH.

The second meeting of the season was held at the Pittsburgh College of Pharmacy, December 15, 1925.

The program of the evening was a comparison of the U. S. P. X with the U. S. P. IX by Prof. Louis Saalbach.

The only other business of the meeting was the appointment of a nominating committee by President Blumenschein. Their report was laid over until the January meeting.

The third meeting of the season was held at the Pittsburgh College of Pharmacy, Tuesday Evening, January 19, 1926.

After the reading of the minutes of the previous meeting President Blumenschein called for further nominations for officers. There being none the Secretary was instructed to cast the ballot for the nominees of the committee as follows:

President, I. Paul Griggs.
Vice-President, Frank S. McGinnis.
Secretary, Louis Saalbach.
Treasurer, P. Henry Utech.
Delegate, to the House of Delegates, Louis Emanuel.

The talk of the evening was a discussion of Price Maintenance and the various bills which have been before the Congress from time to time. The discussion was led by I. Paul Griggs.

The meetings of the Branch are usually held the third Tuesday of the month during the college year.

LOUIS SAALBACH, *Secretary.*

KEATS' HOUSE DEMOLISHED.

An old house at Edmonton in which Keats, the poet, served his apprenticeship to a chemist has been demolished, before a group of his admirers had time to raise money to halt the work of the pickax.

The bricks and stones will be used to erect a memorial to the poet.

ASSOCIATION BUSINESS

AD INTERIM BUSINESS OF THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1925–1926.

Office of the Secretary, 10 West Chase St., Baltimore, Md.

LETTER NO. 5.

December 16, 1925.

To the Members of the Council:

23. Selection of Auditors. Motion No. 15 (see Council Letter No. 4, page 1147) has been carried and Wm. A. Johnson & Co. of Baltimore will be employed as auditors.

24. Secretary's and Treasurer's Bonds. Motions No. 16 and No. 17 (see Council Letter No. 4, page 1147) have been carried and the bonds will be placed as directed in these motions.

25. Use of the Text of the N. F. V. The following letter has been received from Chairman Fischelis of the Committee on Publications:

"A request has been received from Lea & Febiger, Publishers, of Philadelphia, for the partial reproduction of the National Formulary V in the new edition of Caspari's Pharmacy. The Publication Committee has voted to grant the request, and I, therefore, move that Lea & Febiger be granted permission to use the text of the National Formulary V for partial reproduction, at the customary fee of $5.00."

(*Motion No. 18.*) *It is moved by Fischelis that Messrs. Lea & Febiger, Philadelphia, Pa., be granted permission to use the text of the National Formulary V for partial reproduction, at the customary fee of $5.00.*

26. Award of Contract for Printing the Journal for 1926. The following communication has been received from Chairman Fischelis of the Committee on Publications:

"The Publication Committee has given careful consideration to the bids submitted by various printers for the JOURNAL for 1926. Editor Eberle has gone over the various items carefully and both the Editor and the Committee feel that the bid submitted which is most advantageous to the ASSOCIATION, all things considered, is that of the Eschenbach Printing Company which has printed the JOURNAL for several years past. On behalf of the Publication Committee, I therefore wish to move that the contract for printing the JOURNAL OF THE ASSOCIATION for 1926 be awarded to the Eschenbach Printing Company.

Inasmuch as the year is drawing to a close and the new arrangements should be entered into as rapidly as possible, I would like to make the request that you call for an early vote on this motion."

(*Motion No. 19.*) *It is moved by Fischelis that the contract for printing the Journal of the Association for 1926 be awarded to the Eschenbach Printing Company of Easton, Pa.* By request of Chairman Fischelis a vote is called for at this time, but will be considered tentative if there are any objections raised.

27. Salary of the Secretary. The following communication has been received through Chairman Hilton of the Council:

December 12, 1925.

"Dr. Samuel L. Hilton,
Chairman of the Council, A. PH. A.,
Washington, D. C.

Mr. Chairman:

Your Committee appointed to recommend a salary for the Secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION begs leave to report that it has considered the matter and is pleased to recommend the sum of $6000.00 per annum.

(Signed) L. L. Walton, *Chairman.*"

(*Motion No. 20.*) *It is moved by Walton, seconded by Hilton that the report of the Committee to Make Recommendations in Reference to the Salary of the Secretary be adopted.* By request of Chairman Hilton, a vote is called for at this time, but will be considered tentative if there are any objections raised.

E. F. KELLY,
Secretary of the Council.

LETTER NO. 6.

December 18, 1925.

To the Members of the Council:

29. Applicants for Membership. The following applications properly endorsed and ac-

companied by the first years dues have been received:

No. 38, Frank Joseph Fiallos, Togucigalpa, Honduras; No. 39, James Clyde Munch, Pharmacology Laboratory, Bureau of Chemistry, Washington, D. C.; No. 40, George William Fiero, 4217 Dalton St., Los Angeles, Calif.; No. 41, Clarence Ray Durham, 628 W. 41 Place, Los Angeles, Calif.; No. 42, Lillian Mowat, 4525 15th, N. E., Seattle, Wash.; No. 43, Margaret Hays, 5522 34th, N. E., Seattle, Wash.; No. 44, Margaret Doyle, 315 15th Ave., Seattle, Wash.; No. 45, Lawrence Emery Marr, 721 4th St., East Los Angeles, Cal.; No. 46, John Weisel, 24 East Front St., Monroe, Mich.; No. 47, W. W. Klore, 2400 So. State St., Chicago, Illinois; No. 48, Henry Matthew Burlage, 4422 Latona Ave., Seattle, Wash.; No. 49, Jos. Franklin Padula, 319 Chauncey St., Brooklyn, N. Y.; No. 50, Roman Robert Bucykowski, 271 34th St., Pittsburgh, Pa.; No. 51, Stanislaus A. Pawlowski, 5255 W. Fullerton Ave., Chicago, Ill.; No. 52, William Demetrius Hads, Holdrege, Nebraska; No. 53, George S. DeLacy, 220 East 179th St., New York, N. Y.; No. 54, Alfred Bonvicino, 7309 Third Avenue, Brooklyn, N. Y.; No. 55, Florence Miller, 4706 17th Ave., N. E., Seattle, Wash.; No. 56, O. E. Edler, 4423 Evanston Ave., Seattle, Wash.; No. 57, Paul David Carpenter, 665 South St., Elgin, Ill.

(*Motion No. 21.*) *Vote on applications for active membership in the American Pharmaceutical Association.*

30. Applicants for Membership on Account of Contributions to Headquarters' Building Fund. The following non-members of the A. PH. A. have pledged $25.00 or more to the Headquarters' Building Fund and have made a cash payment of $5.00 or more. They are entitled to membership in the ASSOCIATION and you are requested to vote on these applications which have been properly endorsed.

H-45, Carl E. Nelson, 634 Hohman St., Jammond, Ind.; H-46, Stuart Martin Driss, 1500 S. Kaslor Ave., Chicago, Ill.; H-47, Arthur Marshall Earl, 5730 Ridge Ave., Chicago, Ill.; H-48, Leroy Mott Giddings, Proctor, Vermont, Box 642; H-49, Morton Fein, 2607 Ocean Ave., Brooklyn, N. Y.; H-50, M. Joseph Fadgen, 1552 Gorsuch Ave., Baltimore, Md.; H-51, Howard M. Bradbury, 459 C St., N. W., Washington, D. C.; H-52, Sanford Borgman, 63 East 114th St., New York City; H-53 Harold Baylies, 209 Lenox Ave., New York, N. Y.; H-54, Isaac D. Kinley, 7333 Frankstown Ave., Pittsburg, Pa.; H-55, John W. Anderes, 1400 W. 69th St., Chicago, Ill.; H-56, Arthur Daniel Diffenbaugh Langdon, 3011 E. 92nd St., Chicago, Ill.; H-57, Harry B. Raphael, 1237 S. Garfield Ave., Chicago, Ill.; H-58, Louis H. Sachs, 1243 S. 49th Court, Cicero, Ill.; H-59, Bernard P. Sheehan, 5637 S. Sangamon St., Chicago, Ill.; H-60, Isadore Goldman, 181 Woodrow Ave., Dorchester, Mass.; H-61, Jacob Ackermann, 1421 West Third Ave., Waterloo, Iowa; H-62, William Daniel Barnett, Gaithersburg, Md.; H-63, Will Brookley, 803 Terminal Bldg., Lincoln, Neb.; H-64, O. Maynard Carlson, 1304 Sixth St., Rockford, Ill.; H-65, Andrew M. Corbus, 700 LaSalle St., Ottawa, Ill.; H-66, Frank G. Danielson, 2339 Central Ave., Minneapolis, Minn.; H-67, Wilfred Wesley Farrant, 43 Eagle Street, Albany, N. Y.; H-68, Theo. Frish, St. Charles, Minn.; H-69, Hyman Grossberg, 3045 Lakeland Place, Brooklyn, N. Y.; H-70, Raymond James Hodsoll, 222 Hageman St., Schenectady, N. Y.; H-71, J. Thomas Holland, Centreville, Md.; H-72, Harry Willis Hubbard, Dalton, N. Y.; H-73, T. S. Larsen, 1302 4th Ave., Fort Dodge, Iowa; H-74, James T. Lowrie, Broadway & Main, Tarrytown, N. Y.; H-75, Charles Mars, 1457 Sterling Pl., Brooklyn, N. Y.; H-76, Henry P. McGinn, 3101 Ravenwood Ave., Baltimore, Md.; H-77, Chas. B. Millar, Goldsboro, N. C.; H-78, Hymen Minkin, 5729 Westminster, St. Louis, Mo.; H-79, Louis Protus, 10909 Massie Ave., Cleveland, Ohio; H-80, Clinton S. Ramee, Floral Park, L. I.; H-81, Clarence M. Rieker, 2245 Harding Ave., Detroit, Mich.; H-82, Nelson W. Root, 2655 Nicollet Ave., Minneapolis, Minn.; H-83, George W. S. Sherman, 3423 W. 44th St., Minneapolis, Minn.; H-84, Sister Conchessa, 365 6th Ave., South, Fargo, N. Dak.; H-85, John B. Tracy, 221 W. Garfield Blvd.; H-86, Solomon Weinstock, 110 West 3rd St., Mount Vernon, N. Y.; H-87, Barnett Lichtenstein, 85 Second Avenue, New York, N. Y.; H-88, Walter C. Johannes, 1758 W. 36th St., Chicago, Ill.; H-89, Harold Porter, 28 Woodford St., Worcester, Mass.; H-90, Wilbur Marcillius McKinley, Mason City, Ill.; H-91, Guy G. McCandlish, 908 S. 16th St., Malton, Ill.; H-92, H. W. Felker, Leaf River, Ill.; H-93, Wilfred C. White, 230 Lincoln Way, Dixon, Ill.; H-94, Earl H. Lavinder, 6058 Kimbork Ave., Chicago, Ill.; H-95, Robert H. Smith, 3524 6th Ave.,

Des Moines, Iowa; H-96, Sherman J. Penfield, 522 N. Broadway, Dayton, Ohio; H-97, Carl D. McClenahan, 126 Main St., Toulon, Ill.; H-98, John M. Connell, 118 East Main St., Luverne, Minn.; H-99, Christian A. Christiansen, 3976 Elston Ave., Chicago, Ill.; H-100, William Garden, 33 Gouverneur St., New York, N. Y.; H-101, Joseph Anton Senger, 807 N. Rose Street, Baltimore, Md.; H-102, James Nathan Trattner, 108 S. George St., York, Pa.; H-103, W. E. Barnes, Jr., 6423 Kimbark Ave., Chicago, Ill.; H-104, Thos. Harvey Hicks, 3 West Lincoln Ave., Harrisburg, Ill.; H-105, Julius Nathan Livingston Epstein, 1040 Albion Ave., Chicago, Ill.

(*Motion No. 22.*) *Vote on applications of Contributors to Headquarters' Building Fund for Membership in the American Pharmaceutical Association.*

E. F. KELLY,
Secretary of the Council.

LETTER NO. 7.

To the Members of the Council:

31. Use of the Text of the N. F. V. Motion No. 18 (see Council Letter No. 5) has been carried and Messrs. Lea & Febiger are therefore granted permission to use the text for partial reproduction.

32. Award of Contract for Printing the Journal for 1926. Motion No. 19 (see Council Letter No. 5) has been carried and the contract is awarded to the Eschenbach Printing Company of Easton, Pa., as no objections have been raised.

33. Salary of the Secretary. Motion No. 20 (see Council Letter No. 5) has been carried and the salary recommended will be provided for in the 1926 budget, as no objections have been raised.

28, 34 and 39. National Formulary Agency. Letters in reference to the award of the contract for the distribution of the National Formulary V were received from C. H. LaWall, R. P. Fischelis, H. M. Whelpley and J. H. Beal. These letters were communicated to the members of the Council to provide an opportunity for any member, who voted in favor of *Motion No. 9*, to move a reconsideration of the vote on that motion if he so desired.

(*Motion No. 23.*) *It is moved by Whelpley that the vote on Motion No. 9 (see Council Letter No. 2, and Council Letter No. 6) be reconsidered.* A vote on this motion will be called for in two weeks.

35. Election of Members. Motion No. 21 (see Council Letter No. 6, and *Motion 22* (see Council Letter No 6.) have been carried. Applicants for membership numbered 38 to 57 inclusive and applicants for membership numbered H-45 to H-105 inclusive are therefore declared elected.

36. Time and Place of the Next Annual Meeting. In returning his vote on *Motion No. 8* (see Council Letter No. 2, page 1144) Prof. W. C. Anderson wrote as follows:

"I vote 'no' on motion number eight because I feel that the date has been proposed without due consideration for those schools that begin courses the week beginning September 13, 1926.

The New York schools begin work on this date and I believe others will be found in the same position.

I believe September 6th would be a more acceptable date."

Dr. H. V. Arny also called attention to a possible conflict in dates which might result.

This correspondence was brought to the attention of the Local Secretary, Mr. Ambrose Hunsberger, who reports that the week of September 12th was suggested because it preceded the week of the meeting of the National Association of Retail Druggists, which meeting could not be moved forward without great difficulty. The Local Secretary expresses the hope that the Colleges of Pharmacy can arrange their opening date one week later.

With the consent of the Chairman of the Council, the result of the vote on *Motion No. 8* will be considered tentative if any member of the Council wishes to change his vote or to further discuss the question before the result of the vote is announced.

37. Proposed Budget for 1926. The Committee on Finance, through its Chairman, presents to the Council the following list of appropriations to cover the various expenditures of the ensuing fiscal year, in accordance with Article 11 of Chapter II of the By-Laws of the Council. In transmitting this proposed budget, Chairman Koch wrote that it was completed earlier but that the necessary corrections in connection with the establishment of the office of the ASSOCIATION delayed its submission to the Council.

1	Salaries	$10,450.00
2	Printing, Postage and Stationery	1,200.00
3	Clerical Expenses, Secretary's Office	1,200.00

4	Miscellaneous Expenses	200.00
5	Stenographers	350.00
6	Traveling Expenses	750.00
7	Committee on Membership	500.00
8	Committee on Unofficial Standards	100.00
9	YEAR BOOK	6,000.00
10	Premium on Secretary's and Treasurer's Bonds	62.50
11	Auditing Accounts	80.00
12	National Drug Trade Conference	200.00
13	Section on Scientific Papers	25.00
14	Section on Education and Legislation	25.00
15	Section on Commercial Interests	25.00
16	Section on Practical Pharmacy and Dispensing	25.00
17	Section on Historical Pharmacy	25.00
18	National Syllabus Committee	50.00
19	Committee on Recipe Book	500.00
20	Committee on Local Branches	25.00
21	Drug Trade Bureau of Public Information	200.00
22	House of Delegates	100.00
23	International Pharmaceutical Federation	120.00
24	Headquarters' Building Campaign	6,000.00
25	Rent	1,020.00
26	Telephone	80.00
27	Metric Association	10.00
28	Transportation and Drayage	600.00
		$29,922.50

Appropriations for Open Accounts:

29	JOURNAL		$11,000.00
	(*a*) Publication	$9,500.00	
	(*b*) Clerical	1,000.00	
	(*c*) Postage and Stationery	300.00	
	(*d*) Freight, Drayage, etc	200.00	
30	National Formulary		1,000.00
31	Badges and Bars		50.00
32	Certificates		50.00
	Total		$12,100.00
	Appropriations for general expenses		$29,922.50
	GRAND TOTAL FOR THE YEAR		$42,022.50

(*Motion No. 24.*) *It is moved by Koch that the proposed budget for appropriations for 1926 be approved.*

38. Chairmanship of the Committee on Publications. Dr. R. P. Fischelis has presented his resignation as Chairman of the Committee on Publications to the Chairman of the Council explaining that he should have taken this action earlier, but did not because of the interruption which might have resulted in the completion of the very important contracts which this committee has been called upon to handle during the last year. Now that these matters are practically completed he feels that he can ask to be relieved. The Chairman has therefore accepted the resignation with the understanding that Dr. Fischelis will remain as a member of the committee, and has appointed Dr. A. G. DuMez, now a member of the committee, as Chairman of the Committee on Publications in accordance with Article IV of Chapter 11 of the By-Laws of the Council.

(*Motion No. 25.*) It is moved by Kelly that the thanks of the Council of the AMERICAN PHARMACEUTICAL ASSOCIATION be tendered to Dr. R. P. Fischelis for the conscientious and effective services he has rendered as the Chairman of the Committee on Publications of the Council.

39. See Letter No. 7, Items 28, 34 and 39.

E. F. KELLY,
Secretary of the Council.

LETTER NO. 8.

To the Members of the Council:

40. The Secretary wishes to announce the completion of the removal of the offices of the Secretary and the Editor of the JOURNAL, to 10 W. Chase St., Baltimore, Md., and that the property stored by former Secretary Day has been received and placed in the storage room. The office telephone number is Vernon 0014.

41. National Formulary Agency. As two weeks have now elapsed since Council Letter No. 7 was mailed, those members who have not forwarded their vote on *Motion No. 23* are requested to do so promptly, using the enclosed postal for voting, in order that the vote may be announced.

42. Time and Place of Next Annual Meeting. Motion No. 8 (see Council Letter, No. 2, page 1144, and Council Letter No. 7) has been carried with thirteen votes in the affirmative. Anderson voted in the negative and Arny withheld his vote. The following com-

munication under date of January 2nd, has been received from Dr. R. P. Fischelis:

"Regarding the time and place of the next annual meeting, I believe that Dr. Anderson's point is well taken and that the date of the annual meeting should be advanced one week. While it may be desirable to have the conventions of the two national associations follow each other immediately, I believe that in the case of the Philadelphia meeting with the Sesqui-centennial Exposition in progress, it would be advisable to have a week between the two meetings in order to give the hosts of the two conventions an opportunity to rest and readjust their affairs. A week between the two meetings will also enable those who desire to spend some time at the Exposition to do so without interfering with their attendance at the sessions of the Convention. I therefore move that the vote on *Motion No. 8* be reconsidered."

(*Motion No. 26.*) *It is moved by Fischelis that the vote on Motion No. 8 be reconsidered.* A vote will be called for in ten days. Please submit any comments so that they may be circularized when the vote is called for. See Item No. 51 in this letter.

43. Budget for 1926. Motion No. 24 (see Council Letter No. 7) has been carried and the proposed budget is approved.

44. The Thanks of the Council Tendered to Dr. R. P. Fischelis. Motion No. 25 (see Council Letter No. 7) has been carried and the Secretary has expressed the thanks of the Council to Dr. Fischelis.

45. Award of the Contract for Printing the Year Book. The following communication, under date of December 31st, has been received:

"The Publication Committee has carefully considered the bids of the various printers on the YEAR BOOK which is to be published during the coming year and by vote has decided in favor of the Lancaster Press, Lancaster, Pa., they being the lowest bidder. Their plant was inspected by Editor Eberle of the JOURNAL, who reported that in his judgment they were competent to do the work. On behalf of the Publication Committee I therefore wish to move that the contract for the YEAR BOOK to be published during 1926, which is the YEAR BOOK for 1924, be awarded to the Lancaster Press."

(*Motion No. 27.*) *It is moved by Fischelis that the contract for printing the Year Book to be published in 1926, which is the Year Book for 1924, be awarded to the Lancaster Press of Lancaster, Penna.*

46. Approval of the Merchants and Manufacturers National Bank of Newark, N. J., as a depository for the funds of the A. Ph. A. The following communication, dated December 31st, has been received from President Walton:

"You will please be advised hereby that the Committee on Property and Funds has today given unanimous approval to the Merchants and Manufacturers National Bank of Newark, N. J., as a Depository for the funds of the AMERICAN PHARMACEUTICAL ASSOCIATION."

See Article VI of Chapter IV of the By-Laws of the ASSOCIATION.

(*Motion No. 28.*) *It is moved by Walton that the Merchants and Manufacturers National Bank of Newark, N. J., be approved as a depository for the funds of the American Pharmaceutical Association.*

47. Appointment of Delegate to Meeting American Metric Association. The following communication, dated December 30th, 1925, has been received from President Walton:

"I desire to place before the ASSOCIATION as a matter of record the following communication:

TELEGRAM.

Williamsport, Penna.,
December 26, 1925

Professor D. V. Whitney,
1721 Baltimore Avenue,
Kansas City, Mo.

Please accept appointment as AMERICAN PHARMACEUTICAL ASSOCIATION Delegate to meeting American Metric Association, Kansas City, December 28th. Use this telegram as credential.

(Signed) L. L. Walton, *President*

Advice received from Dr. Whelpley on the 26th made immediate action imperative."

48. Chairman of the Committee on Membership for the State of Pennsylvania. The following communication, dated December 30, 1925, has been received from President Walton:

"I am in receipt of the resignation of Dr. Edward C. Reif as Chairman of the Committee on Membership for the State of Pennsylvania. I have accepted Dr. Reif's

resignation as Chairman of the Committee, but he will remain as a member thereof.

I desire to place in nomination for approval by the Council the name of I. Paul Griggs of Pittsburgh as member and Chairman of the Committee on Membership, A. Ph. A., State of Pennsylvania.

Please see that the matter takes the proper course."

(*Motion No. 29.*) *It is moved by Kelly that the appointment of I. Paul Griggs of Pittsburgh, Pa., as a member and Chairman of the Committee on Membership for the State of Pennsylvania be approved.*

49. Applicants for Membership. The following applications properly endorsed and accompanied by the first year's dues have been received:

No. 57, E. L. Woods, Saskatoon, Saskatchewan, Canada; No. 58, Marion Legendre, 124 Baronne St., New Orleans, La.; No. 59, Kenneth H. Shults, 31 North St., Gloversville, New York; No. 60, Roy McConkey, Shelton, Washington; No. 61, Ludwig Waldbusser, 226 St. Nicholas Ave., Brooklyn, N. Y.; No. 62, Julius Hollwegs de Mackiewicz, 739 Main St., New Rochelle, N. Y.; No. 63, Domingo Gracia Zayas, Lealtad St., A. K. No. 6, Arecibo, Puerto Rico; No. 64, Jaime Samuel Mas, 4229 Romain St., Philadelphia, Pa.; No. 65, Herman Edward Hausen, P. O. Box 447, Burley, Idaho; No. 66, John G. Cowan, 123 Fourth St., Bismarck, N. Dakota; No. 67, M. E. Rohrbauch, Room 406, 114 Liberty St., New York City; No. 68, Mildred Davis, 2316 N. 45th St., Seattle, Washington; No. 69, G. G. Green, 256 Green Avenue, Woodbury, N. J.; No. 70, John J. McGinity, Eastern and Elwood Aves., Baltimore, Md.; No. 71, Paul Doiwa, 25 W. Chase Street, Baltimore, Md.; No. 72, R. E. Beck, 1110 East 62nd St., Tacoma, Washington.

(*Motion No. 30.*) Vote on applications for active membership in the AMERICAN PHARMACEUTICAL ASSOCIATION.

50. Applicants for Membership on Account of Contributions to the Headquarters' Building Fund. The following non-members of the A. PH. A. have pledged $25.00 or more to the Headquarters' Building Fund and have made a cash payment of $5.00 or more. They are entitled to membership and you are requested to vote on the applications which have been properly endorsed.

H-106, Charles Aloysius Wyzlic, 5737 Chene Street, Detroit, Michigan; H-107, Burdette G. Dewell, Jr., Woodland Ave., Catskill, New York; H-108, Rasmus Bartleson, 1018 N. 47th St., Seattle, Washington; H-109, Nicholas Finelli, 718 East 218th Street, New York City, N. Y.; H-110, Don. S. Freiday, c/o The Rexall Store, Bartlesville, Oklahoma; H-111, Emil E. Hallin, Parkers Prairie, Minn.; H-112, Louis Strauss, 131 Spencer St., Dorchester, Mass.; H-113, Ralph Ervin Curtis, 573 Third St., Albany, N. Y.; H-114, Adolph Edward Prouza, 2141 S. Crawford Ave., Chicago, Illinois; H-115, Roy Anthony Gohr, 6942 Cregier Avenue, Chicago, Illinois; H-116, William Orlo Knight, 11571 Wentworth Ave., Chicago, Ill.; H-117, Richard Winthrop St. Clair, 92 Henry St., Cambridge, Mass.; H-118, Hubert Piesinger, Le Sueur Center, Minn.; H-119, Laurence Robert Neilsen, 235A Monitor St., Brooklyn, N. Y.; H-120, Frank W. Mondry (Knowles & Mondry), 900 Nie Ave., Minneapolis, Minn.; H-121, Stewart Hudson, 403 Myrtle Ave., Brooklyn, N. Y.; H-122, Rudolph C. Hanson, Pingree, North Dakota; H-123, Asher A. Getchell, 117 12th Ave., S., Nampa, Idaho; H-124, Eli Fedder, 724 Newington Ave., Baltimore, Maryland; H-125, Stuart George Dunlop, 3833 N. Monticello Ave., Chicago, Ill.; H-126, Kearney Buell Daniel, 500 East Market St., Louisville, Kentucky; H-127, Herbert Wesley Counter, 2658 Johnson St., N. E., Minneapolis, Minn.; H-128, Warren F. Coe, 381 Elmwood Ave., Oshkosh, Wisconsin; H-129, Clement L. Cavanaugh, Whittemore, Iowa; H-130, Meyer Balin, 2946 Jackson Blvd., Chicago, Illinois; H-131, Garret H. Nollen, 105 1st Ave., W., Newton, Iowa; H-132, Orrin J. Zeisler, 1412 West 9th, Little Rock, Ark.; H-133, Frank S. Grey, 401 K St., Sacramento, California; H-134, Gordon A. Hartman, Gresham, Nebr.; H-135, Heman F. Oglesby, 1428 E. 55th St., Chicago, Ill.; H-136, Edward S. Albers, Pres. Albers Drug Co., 400–2 State St., Knoxville, Tenn.; H-137, Stanley W. Rust, 10554 Ewing Ave., Chicago, Illinois; H-138, Raymond A. Curlee, 102 N. Genesee St., Waukegan, Illinois; H-139, William A. Tarangelo, 20–24 Hancock St., New York, N. Y.; H-140, Wayne D. Townley, 1200 E. 6th St., Topeka, Kansas; H-141, Anna M. Lehman, 295 Washington Ave., Brooklyn, N. Y.; H-142, N. Theodore Hanson, 1427 E. 67 Pl., Chicago, Illinois; H-143, Rudolph J. Schobert, 3401 Fullerton Ave., Chicago, Illinois; H-144, Carl A. Otto, 1515 W. Jackson Blvd., Chicago, Illinois;

H-145, Paul Francis Volpe, 323 N. Maple Ave., Oak Park, Illinois; H-146, Israel S. Morin, 24 Coral St., Worcester, Mass.; H-147, August Yomaitis, 11858 S. Michigan Ave., Chicago, Illinois.

(*Motion No. 31.*) *Vote on applications of Contributors to the Headquarters' Building Fund for Membership in the American Pharmaceutical Association.*

51. Time and Place of the Next Annual Meeting. Since this letter was prepared, a communication dated January 16, 1926, has been received from Dr. R. P. Fischelis withdrawing his motion to reconsider the vote on *Motion No. 8*, on account of information he has received from Local Secretary Hunsberger, that the hotel facilities have already been engaged for the week of September 13, 1926, and that, because of the Sesqui-Centennial, it would be almost impossible to fix another date (see Council Letter No. 2, page 1144, Council Letter No. 7, and Item No. 42 in this letter). *Motion No. 26* is therefore withdrawn.

E. F. KELLY,
Secretary of the Council.

THE VALUE OF LIBRARIES.

A correspondent of the *Baltimore Sun* states that "the city library of Newark, N. J., only a few years ago had as little support from business men as the Pratt has today. Yet by making the best possible use of its resources to aid business men in their business, showing them what it had done and what more it could do with additional facilities, it has steadily broadened its work in this field. Today it is a leader in work of this sort, and—most significant—has the constant support of business men when it asks for further funds to enlarge this particular work.

"The newly established city library of Richmond, Va., has made a beginning along the same line and met with most encouraging coöperation from men in the business world of Richmond.

"With three universities in this city devoting constantly increasing attention to scientific business training and enrolling rapidly increasing numbers of students, can it be doubted that Baltimore would welcome an effort of the Pratt to extend its work in this direction?

"Business today is becoming more and more of a science, and those men are surest of success in it who can most successfully assimilate its scientific principles. Its literature is every day making the course of the beginner more certain and adding to the value of the experience of the older man in business, who will supplement his practical knowledge with the proven theories of his calling."

POTASH DEPOSITS IN WESTERN TEXAS AND SOUTHEASTERN NEW MEXICO.

According to a geological survey report issued at the Interior Department discovery was made, through drilling for oil in western Texas, of large potash salt deposits. It is said that these beds are likely to be thick and the salt like that of the Stassfurt mines.

Reports on Distribution. The Chamber of Commerce of the U. S. A., Washington, D. C., is prepared to supply to those who are interested printed copies of the reports of the various committees as submitted to and adopted by the National Distribution Conference recently held at Washington. There are six of these reports, complete sets of which are obtainable at $1.50. The prices for individual reports are as follows:

Collection of business figures—20c
Trade relations—35c
Market analysis—advertising and advertising mediums—20c
Expenses of doing business—50c
Methods of distribution—20c
General conditions affecting distribution—20c

A PRECEDENT THAT MAY BE ADVANTAGEOUSLY FOLLOWED ELSEWHERE.

There are several societies in Paris that have for a purpose coöperation with the Paris Faculty of Pharmacy. Recently "The Society of Friends of the Paris Faculty of Pharmacy" has been organized. This society lends its moral and financial aid to the Faculty to develop its collections, add to its library, and subsidize its laboratories.

Support is given to colleges of pharmacy by pharmacists; however, an organization with a purpose to have related matters constantly in mind will awaken the interest of some one able and willing to contribute in a large way. Not only is this true in connection with local efforts, but the opportunities are open for endowing sections and work of the Headquarters.

EDITORIAL NOTES

Editor: E. G. EBERLE, 10 West Chase St., Baltimore, Md.

Members of the Council, A. PH. A.: S. L. HILTON, *Chairman;* W. C. ANDERSON, *Vice-Chairman;* E. F. KELLY, *Secretary;* JAMES H. BEAL, CHARLES H. LAWALL, HENRY M. WHELPLEY, H. V. ARNY, A. G. DUMEZ, H. C. CHRISTENSEN, JULIUS A. KOCH, ROBERT P. FISCHELIS. *Ex-Officio;* L. L. WALTON, President; Vice-Presidents, W. C. ANDERSON, CLYDE L. EDDY; E. F. KELLY, Secretary; C. W. HOLTON, Treasurer; WILLIAM D. JONES, Chairman of the House of Delegates. Editors of the JOURNAL and YEAR BOOK: E. G. EBERLE and A. G. DUMEZ. Committee on Publications: A. G. DUMEZ, *Chairman;* R. P. FISCHELIS, H. V. ARNY, H. M. WHELPLEY, E. F. KELLY, C. W. HOLTON, E. G. EBERLE.

Collaborators: The Members of the Council; the Editor of the YEAR BOOK, A. G. DUMEZ; E. FULLERTON COOK; Chairman, U. S. P. Revision Committee; W. L. SCOVILLE, Chairman, N. F. Revision Committee; the Chairmen of the Sections, A. PH. A.: F. F. BERG, J. G. BEARD, H. C. NEWTON, AMBROSE HUNSBERGER, L. K. DARBAKER; WILLIAM D. JONES, Chairman of the House of Delegates, A. PH. A.; EDWARD H. KRAUS, President, A. A. C. P.; CHARLES B. JORDAN, Chairman Executive Committee, A. A. C. P.; M. N. FORD, President, N. A. B. P.; HENRY C. CHRISTENSEN, Secretary, N. A. B. P.

NATIONAL DRUG TRADE CONFERENCE.

The December meeting of the National Drug Trade Conference was convened at Hotel Washington, Washington, D. C., on December 7th, by President Samuel C. Henry, Chicago. There was a full representative attendance from the member associations, as follows:

From the AMERICAN PHARMACEUTICAL ASSOCIATION: S. L. Hilton, A. R. L. Dohme, James H. Beal; from the National Association of Retail Druggists, Samuel C. Henry, Ambrose Hunsberger, and James F. Finneran. The National Wholesale Druggists' Association was represented by C. Mahlon Kline, C. W. Whittlesey, and W. L. Crounse; the proprietary Association by Harry B. Thompson, Frank A. Blair, and B. Heuissler; the American Pharmaceutical Manufacturers' Association by Carroll Dunham Smith and Harry Noonan; the American Drug Manufacturers' Association by A. Homer Smith, Horace M. Bigelow, and Carson P. Fraily; the National Association of Boards of Pharmacy by H. C. Christensen and T. W. Kerfoot, Jr.; the American Association of Colleges of Pharmacy by Prof. E. F. Kelly, E. Fullerton Cook, and W. F. Rudd.

The officers elected for the ensuing year are as follows: *President,* Samuel C. Henry; *Vice-President,* H. C. Christensen; *Secretary-Treasurer,* E. F. Kelly; *Councilor* in the United States Chamber of Commerce, Samuel L. Hilton. The *Executive Committee* is composed of Messrs. J. H. Beal, C. Mahlon Kline, Samuel C. Henry, Harry Noonan, Carson P. Fraily, Harry B. Thompson, T. W. Kerfoot, Jr., and E. F. Kelly.

BULLETINS OF THE DRUG TRADE BUREAU OF PUBLIC INFORMATION.

Director Robert P. Fischelis has issued bulletins D-1 to D-6.

Bulletin D-1 relates to the meeting of the Drug Trade Conference. The sixth annual meeting of the Drug Trade Bureau of Public Information was held at Hotel Washington December 9, following the meeting of the Drug Trade Conference. A most interesting exhibit of clippings was displayed and explained by the Director. The Bureau reëlected Dr. R. P. Fischelis of Newark, N. J., *President and Director* of the News Service; H. C. Christensen of Chicago, Ill., *Secretary-Treasurer,* succeeding C. H. Waterbury, who could not accept reëlection because of a change in his business connections.

The Director has also issued a general statement, this follows:

"As we begin the seventh year of activity of the Drug Trade Bureau of Public Information we can look with considerable satisfaction upon the achievements of 1925. A total of fifty-five bulletins were sent to the newspapers during the fiscal year and in practically all cases they met with considerable success as far as publication of the subject matter was concerned. Our clipping service indicates that pharmacy is receiving a tremendous amount of space in the daily press as a result of our bulletins and that in newspaper offices

the general opinion of pharmaceutical work and pharmaceutical organizations has taken a very favorable turn. Not alone the news pages but the editorial pages of the daily press contain comments on pharmacy and pharmacists and the general tone of these comments is complimentary. Unfavorable headlines are no longer common, and, undoubtedly, the general attitude of newspapers toward pharmaceutical news has been influenced favorably by the Bureau. The total expenditures for the services of our newspaper man, clerical and office expense, clipping service, etc., was $2,737.44. A budget totaling $2,800.00 has been approved for 1926, and it is hoped that the constituent members of the Bureau will so adjust their appropriation for this work as to enable us to carry out our program.

As has been our custom, we shall continue to send to pharmaceutical journals, deans of colleges, secretaries of associations, board of pharmacy, and other interested individuals, copies of the bulletins issued by the Bureau. These bulletins will reach our mailing list some time after they have been released to the press as we are obliged to conserve our resources by mailing several bulletins at one time."

Bulletin D-2 relates to an address by Secretary E. F. Kemp of the Proprietary Association, in which he outlines figures relating to the business in general. A brief reference to this was made in the January JOURNAL on page 69.

Bulletin D-3 related to various tax measures and the views expressed by officials of the N. A. R. D. regarding narcotic decisions, etc.

Bulletin D-4 makes reference to the new offices of the JOURNAL and of Secretary E. F. Kelly of the AMERICAN PHARMACEUTICAL ASSOCIATION, who succeeded Secretary William B. Day on January 1, at which time also Charles W. Holton of Newark, N. J., succeeded Secretary E. F. Kelly as Treasurer. The remainder of the bulletin gives an interesting account of the progress of the Headquarters' Fund.

Bulletin D-5 refers to statements made by Prof. William J. Husa, of the Department of Pharmacy in the University of Florida. The substance of these remarks relates primarily to the care that should be exercised by the laity in handling medicines. The label should always be carefully read before administering the medicine, also again when the bottle is replaced on the shelf. Further comment is made relative to the care necessary in compounding all prescriptions, especially those in which narcotics are dispensed.

Bulletin D-6 makes reference to the nomenclature adopted by the International Congress at Brussels.

INTERNATIONAL CONGRESS OF PLANT SCIENCES.

(Fourth International Botanical Congress.)

Investigators and teachers in the plant sciences representing all aspects of botany, plant chemistry, plant pathology, pharmaceutical botany, and bacteriology, agronomy, horticulture, and forestry are invited to attend the International Congress of Plant Sciences to be held at Ithaca, August 16–23, 1926. This invitation is extended to all countries of the world.

This Congress is scheduled to follow the usual academic sessions abroad, also the short summer session of the various universities and colleges in the United States. It is believed to offer the first opportunity ever arranged in the United States for a general conference of all those professionally engaged in plant work. It possesses the additional compelling interest accruing from unrestricted international representation.

In order that a part of the program may be representative of outstanding leadership, the Congress will be divided into about one dozen sections, each section with an invitation program occupying about four morning sessions or a little more than one-fourth of the available time. These formal programs will be supplemented by another feature that promises also to be of exceptional interest. Ample time will be set apart for round table or informal discussions, which in some cases may be scheduled in advance, and in others may be arranged both as to topics and participation after the Congress actually convenes. This is intended to provide for the widest participation in sectional activities. Supplementary opportunities for individual contact and participation are made possible through the non-commercial exhibits and through the provision for excursions and inspection tours of various types suited to the diverse needs of the different sections.

Although the Congress is not to provide an occasion for *legislation* on regulatory matters of international significance (such as nomenclatorial rules) the organizing committee has expressly provided that "adequate opportunity shall be accorded all sections for the discussion of regulatory recommendations of international

significance," in order that a better understanding may be reached for definite action at a subsequent international congress.

The sections thus far authorized and the secretaries representing these groups are as follows:

Agronomy.—C. H. Myers, Cornell University, Ithaca, N. Y.

Bacteriology.—J. M. Sherman, Cornell University, Ithaca, N. Y.

Cytology.—L. W. Sharp, Cornell University, Ithaca, N. Y.

Morphology, Histology and Paleo-botany.—D. S. Johnson, Johns Hopkins University, Baltimore, Md.

Ecology.—H. L. Shantz, Bureau of Plant Industry, Washington, D. C.

Forestry.—R. S. Hosmer, Cornell University, Ithaca, N. Y.

Horticulture.—A. J. Heinicke, Cornell University, Ithaca, N. Y.

Physiology.—O. F. Curtis, Cornell University, Ithaca, N. Y.

Pathology.—Donald Reddick, Cornell University, Ithaca, N. Y.

Pharmacognosy and Pharmaceutical Botany.—H. W. Youngken, Massachusetts Col. of Pharmacy, Boston.

Taxonomy.—K. M. Wiegand, Cornell University, Ithaca, N. Y.

Mycology.—H. M. Fitzpatrick, Cornell University, Ithaca, N. Y.

Genetics.—C. E. Allen, University of Wisconsin, Madison, Wis.

Communications regarding the Congress should be addressed as indicated below:

(1) Concerning round tables and other strictly sectional matters—to the appropriate sectional secretary.

(2) Concerning exhibits and general program matters—L. W. Sharp, Cornell University, Ithaca, N. Y.

(3) Concerning excursions, collecting trips, inspection tours, local arrangements, transportation, etc.—H. H. Whetzel, Cornell University, Ithaca, N. Y.

(4) Concerning the Congress in general—B. M. Duggar, Missouri Botanical Garden, St. Louis, Mo.

PERSONAL AND NEWS ITEMS.

The new Health Commissioner of New York, Dr. Louis J. Harris, addressed the drug and chemical section of the New York Board of Trade and Transportation, February 3.

Ex-President, H. V. Arny, was the AMERICAN PHARMACEUTICAL ASSOCIATION delegate to the recent annual meeting of Minnesota Pharmaceutical Association. He also addressed the Northwestern Branch American Pharmaceutical Association, and the Detroit Branch, at the respective February meetings.

Publicity Director, E. L. Newcomb, was the delegate of the AMERICAN PHARMACEUTICAL ASSOCIATION to the Iowa State Pharmaceutical Association.

President L. L. Walton was a speaker at the 77th Annual Banquet of Lycoming County Medical Society. The subject of his address was "The Relations of the Physician and Pharmacist."

Prof. Louis Saalbach discussed the changes in U. S. P. X at the December meeting of the Pittsburgh Branch, AMERICAN PHARMACEUTICAL ASSOCIATION. **I. Paul Griggs** spoke on "Price Maintenance" at the January meeting.

Entomologist Raymond C. Shannon, of Washington, D. C., has gone to Buenos Aires where he will be associated with the Public Health Department of the Argentine Government. He will be engaged during the next two or three years in making mosquito classification, to determine the species injurious to man and furnish a basis for a campaign to stamp out malaria and yellow fever.

William M. Steuart, Director of the Census Bureau, recently sustained serious injuries in a fall occasioned by getting out of the way of an automobile in crossing a downtown street in Washington. Mr. Steuart is an uncle of Mrs. E. F. Kelly.

H. Lionel Meredith, for many years pharmacist at Hagerstown, Md., has located at Fort Pierce, Fla. He will continue his laboratory and more extended service to pharmacy. His office and store rooms are on the ground floor of the main arcade of a large office building, near which a new three-hundred room hotel is being built. In speaking of the progress of his new home city, Mr. Meredith says that five million dollars are being spent on streets, sewers, etc.; $250,000.00 on hospitals and large amounts on docks and piers and for deepening the channel.

Dr. John J. Abel, professor of pharmacology at Johns Hopkins Medical School, well and favorably known for his researches and successes, met with a serious accident in being run over by an automobile a month or more ago. His most recent success is in the production of a pure crystalline form of insulin.

Last month he delivered several lectures in Chicago, notwithstanding his injuries and despite his sixty-nine years of age. Dr. Abel recently received the $2500.00 prize of the Research Corporation of New York, awarded for his services in the promotion of human welfare as a result of his work.

Prof. Anton Hogstad, Jr., has tendered his resignation to President Pugsley of the South Dakota State College as Associate Professor and Director of the Medicinal and Poisonous Plant Investigation Gardens of the Division of Pharmacy. Professor Hogstad had intended to return to South Dakota at the close of this year but has decided to continue his graduate studies at the University of Minnesota under the direction of Dr. Gortner, for the Ph.D. in Biochemistry.

Dean Charles H. LaWall, in speaking of botany as his hobby, said: "I do most of my specimen hunting along the coastal strip of New Jersey, using my summer home at Longport as a base. In the latter part of June and early in July it is possible to find orchids that are not only rare but attractive from the esthetic standpoint. Then, too, dozens of attractive types of plants grow in swamps and on the edges of woods."

Dr. Hermann Engelhardt, Baltimore, has been in poor health for a month or more; he is, however, improving.

M. Henri Correvon of the Jardin Alpin d'Acclimatation at Geneva, Switzerland, is visiting this country. His Jardin Botanique de la Linnea, in Switzerland, is world famous, while he is also an author and botanist of note, especially in his own field of Alpine plants. Last year the Royal Horticultural Society of London presented him with its gold medal.

Dean Edward H. Kraus sailed January 28th on the S. S. Cleveland, of the United American Lines, for a three months' trip through England and Western Europe where he will visit the important scientific and educational institutions. Among other things which he plans to do while abroad will be the visitation of a number of the important pharmaceutical institutes in order that a study may be made of the professional and educational conditions in pharmacy.

F. E. Mortenson, Hollywood, California, Past-President of the National Association of Boards of Pharmacy, has been elected President of the Gardner Business Men's Association.

W. W. Burgis, Greenville, S. C., has given $350,000 for the building and equipment of a hospital for crippled children to be erected in Greenville.

While Benjamin Franklin, whose 220th anniversary was quite generally celebrated last month, had no direct connection with pharmacy, he was active in the establishment of the Pennsylvania Hospital in which one of the first, if not the first, hospital pharmacies was established. (See JOUR. A. PH. A. for June 1923, p. 543.) He also was the antecedent of a number who were linked with American pharmacy.

Dr. G. Milton Linthicum, of the University of Maryland, expressed opposition to the proposal to form a corporation for medical and surgical service to companies and individuals. He also deplored the tendency toward free state and corporation medical service. It is probably safe to say that pharmacists generally agree with all Dr. Linthicum said; however, it is becoming more and more of a serious matter with the people away from cities to have medical service. Recently a well-settled community of this section advertised and used other efforts for persuading a physician to establish himself in that community. Specialization has great advantages, but there are some disadvantages.

Lee O. Donald has been elected President of the Dallas County Retail Druggists' Association. It is proposed to have noon-day luncheons, at which time problems concerning the drug trade will be discussed. The State Pharmaceutical Association and the American Medical Association will convene in Dallas this year. The West Texas Druggists' Association will meet in Stamford, March 10.

Chinese members of the Anti-Opium Association are arranging for a presentation to Dr. W. W. Willoughby, of the Johns Hopkins University, in appreciation of his services at the Geneva Opium Conference, where he was adviser to the Chinese delegation.

Dean A. G. DuMez has entered upon his duties at the University of Maryland School of Pharmacy.

Publicity Director, E. L. Newcomb, was in Baltimore recently in conference with Chairman H. A. B. Dunning, Secretary E. F. Kelly and Chairman of the Council, Samuel L. Hilton.

Treasurer Charles W. Holton has taken over the duties of office, after conclusion of the audit of the retiring treasurer's books and accounts. Ex-President, now Treasurer Hol-

ton, came to Baltimore with Mrs. Holton and children to celebrate the 85th birthday of Mrs. Charles E. Dohme. Mrs. Dohme is in excellent health and enjoyed the day with her children and grandchildren about her. This is the presidential family of the AMERICAN PHARMACEUTICAL ASSOCIATION; both father and son of both families served the ASSOCIATION as presiding officers.

Lloyd N. Richardson, of Belair, has succeeded H. L. Meredith, former Chairman of the Maryland Board of Pharmacy, as member of the Board.

I. Paul Griggs, of Pittsburgh, has succeeded **Edward C. Reif** as Chairman of the Committee on Membership for Pennsylvania.

Mrs. John F. Hancock, of Baltimore, celebrated her 83d birthday, January 13th. All of the older members will remember her and the beloved and lamented Ex-President of the A. PH. A. Mrs. Hancock has not been very well lately, but her health is improving. The interest of the father in the AMERICAN PHARMACEUTICAL ASSOCIATION has been transmitted to the son, our fellow-member, **James E. Hancock.**

OBITUARY.

JOSEPH HENRY MAIDEN.

Joseph Henry Maiden, honorary member of the AMERICAN PHARMACEUTICAL ASSOCIATION, died November 8, at Sydney, New South Wales.

A sketch of the deceased will be found on p. 233 of the March JOURNAL A. PH. A., for 1920, and further references to him are made in the same volume, pp. 438 and 441. The deceased was born in London, April 25, 1859. Impaired health had forced him to abandon a University career to seek a milder climate, when he came to Australia in 1880. He was elected Curator of the Technological Museum in Sydney, in 1881. His two greatest works are "Critical Revision of the Genus Eucalyptus" and "Forest Flora of New South Wales," and his "Useful Native Plants of Australia" presents the first attempt to collect and systematize the scattered literature of Australian economic plants.

As Curator of the Botanic Gardens at Sydney he did much to develop these into one of the finest in the world and established one of the most comprehensive herbariums in the Southern hemisphere. About the first of May 1924, Mr. Maiden retired and it was hoped that many more years would be given him, but this was not to be. The *Pharmaceutical Journal and Pharmacist* closes an appreciation by saying—"It is given to few of us to carry out so faithfully, fully, and fruitfully so noble an idea and discipline of thought and deed as were exemplified in Mr. Maiden's character and career."

MURRAY GALT MOTTER.

Murray Galt Motter, for a number of years a member of the AMERICAN PHARMACEUTICAL ASSOCIATION, died January 14, at his home in Washington, D. C. Dr. Motter graduated from University of Pennsylvania School of Medicine, in 1890. He was co-editor with the late Martin I. Wilbert of the earlier issues of the "Digest of Comments U. S. P. and N. F.," one of the incorporators of the U. S. Pharmacopœial Convention, and at one time its Secretary. He was joint author with Martin I. Wilbert of "A Digest of the Laws and Regulations in Force in the United States Relating to the Possession, Use, Sale, and Manufacture of Poisons and Habit-Forming Drugs." From 1909–1910 he was Secretary of the Section on Pharmacology and Therapeutics, A. M. A.

Dr. Motter was for several years professor of physiology, Georgetown University School of Medicine; at one time, chief inspector, District of Columbia Health Department; Secretary-Treasurer, National Confederation of State Medical Examining and Licensing Boards; technical assistant and, later, librarian hygienic laboratory, U. S. Public Health Service.

Members of the AMERICAN PHARMACEUTICAL ASSOCIATION sympathize with Frater Wilhelm Bodemann in the loss by death of his daughter, Mrs. Eichenberger, January 27. Her husband and two sons survive. The attachment of the grandfather to the latter is well known to friends and readers of pharmaceutical publications.

Walter M. Frohwein, member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1920, a prominent pharmacist of Elizabeth, N. J., died January 21. Sympathy is expressed to members of his family. The deceased was associated in business with a brother.

C. Stanley French, Philadelphia, died January 31, after an illness of two weeks. The deceased was President of Samuel H. French

Company, a cousin of the late Howard B. French, and nephew of Samuel H. French, founder of French, Richards & Co., predecessors of Smith, Kline & French Company. The deceased was in his 69th year.

The death of Prof. Dr. C. van Wisselingh at Groningen (Holland) is reported. The deceased had been connected with the University for more than 40 years. The *Pharmaceutisch Weekblad* published an interesting autobiography of the deceased—pp. 1229–1245 and 1254–1269 (1925). Professor van Wisselingh was an apothecary and specialized in plant physiology, plant microscopy, etc. Articles pertaining to the chemistry and pharmacy of plants, the location and production of chitin in the plant, etc., were printed almost exclusively in Dutch periodicals and in a few French and German publications. Dr. van Wisselingh never published his researches in periodicals in the English language although some abstracts of his work on seed-coats can be found in the *Chemical Abstracts* and *Botanical Abstracts*. The latter were prepared by our fellow-member Dr. H. Engelhardt, to whom we are indebted for the information relative to the deceased.

Arthur Whitman Claflin, President of George L. Claflin Company of Providence, R. I., died January 12, aged 73 years. He was prominent in business, organzation and municipal affairs. The deceased is survived by Mrs. Claflin, a daughter, Louisa Howard, and a son, Albert Whitman; the latter is a member of the AMERICAN PHARMACEUTICAL ASSOCIATION. Sympathy is extended to the bereaved.

SOCIETIES AND COLLEGES.

THE AMERICAN PHARMACEUTICAL ASSOCIATION IS NOW AN AFFILIATED SOCIETY OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The AMERICAN PHARMACEUTICAL ASSOCIATION became affiliated with the American Association for the Advancement of Science, at the Kansas City Meeting, December 28, 1925, to January 2, 1926. The next meeting will be held in Philadelphia, December 27, 1926.

By a new ruling of the council, any member of an affiliated organization may at any time within the next three years join the American Association for the Advancement of Science without paying the usual five-dollar entrance fee. The Permanent Secretary is Burton E. Livingston, Smithsonian Institution Building, Washington, D. C. The President-elect of the Association is Dr. L. H. Bailey, Professor Emeritus in the College of Agriculture at Cornell, which largely owes its establishment to him. He was dean and active member of its faculty for twenty-five years or more.

CHIEF OF THE CHEMICAL DIVISION, BUREAU OF STANDARDS.

Dr. Edward Wright Washburn, Urbana, Ill., has been appointed chief of the chemical division, bureau of standards, Department of Commerce, succeeding Dr. W. F. Hillebrand, deceased.

Graduating from the Massachusetts Institute of Technology in 1905, Dr. Washburn brings to his new position a thorough knowledge of chemistry and allied subjects and a wide acquaintance in the field of chemical research. He was formerly editor of International Critical Tables and has contributed to periodicals covering the field of chemical research.

CHANGES AT THE UNIVERSITY OF MARYLAND.

Dr. Albert F. Woods has sent in his resignation as President of the University of Maryland to accept an important post in the Government agricultural service. Dr. Woods was awarded a gold medal at the Paris Exposition in 1900 for his agricultural research. He was assistant botanist of the University of Nebraska from 1890 until 1893, assistant chief and first assistant pathologist of the Division of Vegetable Physiology and Pathology, 1893–1900, and pathologist, physiologist and assistant chief of the Bureau of Plant Industry, United States Department of Agriculture, from 1900 until 1910. In 1910 he was chosen dean of the Minneosta State Agricultural College and director of the State agricultural experiment station. It was from this college that he came to the Maryland Agricultural College.

Announcement has been made by the Department of Dr. Woods' appointment as Scientific Director.

Dr. Raymond Allen Pearson, President of the Iowa State College of Agriculture and Mechanical Arts, has tendered his resignation to the board of that institution to accept an offer of the Presidency of the University of

Maryland to succeed Dr. Woods. That both have been requested by the boards of their respective universities to reconsider their actions evidences the high regard in which they are held.

PERUVIAN DRUGGISTS' ASSOCIATION.

The membership of the "Asociacion de Droguistas del Peru" is limited to wholesale dealers and importers in drugs, pharmaceutical chemicals and preparations, and druggists' sundries, employing a qualified pharmacist in accordance with existing legal requirements. The objects of the association are to protect and further the interests of its members, provide and exchange information required by them in the course of business, equip and maintain a library, and to promote business in general. Señor Felix Oliva Salaverry was elected the first President of the association. Foreign manufacturers, or their representatives in Peru, may become associate members.

Señor Juan Anaya, the new President of the Federacion Nacional de Farmaceuticos del Peru, has recently presented a fully equipped chemical laboratory to the Institute of Pharmacy.

SIMPLIFYING DRUG CATALOGS.

The American Drug Manufacturers' Association committee on simplification of catalogs was in session in New York, in December. The committee's work has been along the line of continuing the elimination of numerous items believed to be obsolete or unnecessary from the trade catalogs. The association has had a committee engaged on this task for a year or two, in coöperation with the Department of Commerce in its campaign for elimination of waste and simplified practice. The plan has been reported to be, when the Drug Manufacturers' Association has completed the list of items to be deleted, to have a get-together conference at the department with representatives of the wholesale and retail branches of the trade with a view to reaching an agreement on eliminating many thousand items.

NEW YORK SQUARE CLUB.

The Drug and Chemical Square Club, New York, held its regular monthly meeting January 21 in the Marinello Company offices, 72 Fifth Avenue. A short address was made by Charles A. MacHenry, President of the National League of Masonic Clubs. This was followed by the presentation of three solid gold life membership cards to Thomas R. Freebody, Henry B. Smith, and Elmer H. Merritt, the retiring tyler, all former Presidents.

PHILADELPHIA DRUG EXCHANGE.

At its annual meeting, Wednesday, January 28, the Philadelphia Drug Exchange re-elected as *President*, C. Mahlon Kline; other officers were chosen as follows: *Vice-President*, Herbert R. McIlvaine; *Secretary*, Joseph W. England; *Treasurer*, A. L. Hilles, Jr.

The Annual Report of the Exchange contains the following subjects: "Annual Message," C. Mahlon Kline, *President;* "Report on Business and Financial Conditions," Joseph W. England, *Secretary;* "Reports on Conditions in the Drug, Chemical and Allied Industries Legislation," Walter V. Smith; "Crude Drugs and Drug Milling," Herbert R. McIlvaine; "Medicinal Chemicals," F. L. Bodman; "Heavy and Industrial Chemicals," Alex. C. Fergusson, Jr.; "Volatile Oils," J. F. Pound; "Pharmaceutical and Biological Products," H. H. Whyte; "Paints, Oils and Varnishes," C. Stanley French; "Advertising and Selling," Harrison S. Hires; "Accounting, Credits and Collections," Henry Paul Busch; "Group Insurance," John F. Belsterling; "Assets or Ashes," A. L. Hilles, Jr.; "If All Research Should Stop?" Charles H. LaWall. These reports are brief but to the point and much valuable information is contained in them.

On Thursday, January 28th, the Annual Dinner was given at the Bellevue Stratford, attended by nearly 300 members and guests; the ladies graced the occasion. The speakers of the evening were Hon. Harry S. McDevitt, Judge of Court of Common Pleas No. 1, Philadelphia, who embodied in his splendid address some of the reasons for the causes of crime. C. Burgess Taylor spoke on "The Business Administration of a City Government." He advocated a commission form of city government with a business manager. He brought into his address the Athenian citizen's oath: "We will never bring disgrace to this, our city, by any act of cowardice or dishonesty. We will fight for the ideals and sacred things of the city. We will revere and obey the city's laws and do our best to incite a like respect and reverence in others. We will strive unceasingly to quicken the public's sense of duty. We will transmit this city to those who come after us, better and more beautiful than it was transmitted to us."

It seems to the writer that this might be

paraphrased so as to apply to pharmacy and pharmacists.

W. Russell Green spoke of "The Romance of Your Job." He left no doubt in the minds of his hearers that the individual reaps the rewards of his work. Music added to the pleasures of the evening.

BOSTON RETAIL DRUGGISTS' ASSOCIATION.

Officers were elected at the fifty-first annual meeting of Boston Druggists' Association, January 27th, at Young's Hotel as follows: *President*, Harry C. Wiggin; *Treasurer*, C. Herbert Packard; *Secretary*, Walter R. Dolliver; *Executive Committee:* C. Fred Wright, W. H. Glover, J. R. Sawyer, C. C. Hearn, A. H. Bartlett, T. J. Bradley, F. S. Rogers. *Membership Committee:* J. E. Mullen, W. D. Elliott, H. B. Knight, S. G. Small, A. S. MacKusick.

The speaker of the evening was Lieut. Harold L. Connor, aide to the commander of the eastern division of the United States Coast Guard, extending from the Thames river in Connecticut to the Canadian border.

The Boston Retail Druggists' Association has subscribed and sent in $300 for the A. PH. A. Headquarters' Building Fund.

MINNESOTA PHARMACEUTICAL ASSOCIATION.

The Minnesota Pharmaceutical Association held its forty-second annual meeting in Minneapolis, February 9–11. President Charles D. Johnson, of Brainerd, conducted the business sessions; Prof. Gustav Bachman is the Secretary. Dean F. J. Wulling presided over the scientific sessions. Dr. H. V. Arny, Past-President of the AMERICAN PHARMACEUTICAL ASSOCIATION, was one of the speakers, his subject being "The Broader Significance of Pharmaceutical Research." Among other speakers and subjects of the regular sessions were, "Legislation," by Secretary Samuel C. Henry of the N. A. R. D.; "Studies on Operation of Retail Drug Stores," Prof. H. J. Ostlund; "Merchandising," Con De Pree; "Window Decoration," L. F. Wood. E. L. Newcomb and Carl Weeks also added to the program by instructive and interesting addresses.

THE SCIENTIFIC SECTION AND NORTHWESTERN BRANCH A. PH. A.

Besides the address heretofore mentioned, that by Dr. H. V. Arny, the following addresses, reports, and papers were part of the scientific program:

"The College of Pharmacy (Annual Historial Paper);" "Selecting Recruits for Pharmacy," and "Pharmacy Teacher Training," by Dean Wulling; Brief address by the Head of the School of Pharmacy of North Dakota, Prof. W. F. Sudro; Report of the Committee on Practical Pharmacy, F. A. Upsher Smith; Report of Committee on Drug Plant Culture, G. J. DeMars; Report of the Committee on Association Policy, Dean Wulling; Report of the Committee on Drug Adulteration, Prof. G. Bachman; Report of the Committee on U. S. P. and N. F. Revision, Prof. E. L. Newcomb; Report of the Chairman of the Woman's Section, Miss Elizabeth Malerich; An Historical Talk, Mrs. Joseph Kehrer; Presentation of the M. S. Ph. A. Scholarship Token to Harold Landeen, Prof. G. Bachman; Presentation of the Henry Kraemer Memorial Volume, Dean Wulling; Report of the Historical Committee, Charles T. Heller; Report of Committee on Professional Standards, A. J. Osweiler; Report of Committee on Research, Prof. C. H. Rogers; Report of the Committee on Public Health, H. Martin Johnson; "The Hatcher Newcomb Cat Method of Digitalis Assay," Instructor Earl B. Fischer; "The Comparative Values of Root Bark, Trunk Bark and Branch Bark of Prunus Serotina," Instructor, Earl B. Fischer.

The Mack Printing Company now operates the Corporation formerly known as the Eschenbach Printing Company. The Corporation is about to start the construction of a new and highly modernized printing establishment in Easton; there is no change in ownership or control. The JOURNAL of the ASSOCIATION, and a number of the YEAR BOOKS have been published by this corporation which is printing the JOURNAL and also the NATIONAL FORMULARY V.

The Editorial Office is indebted to Fritzsche Bros. for a convenient and useful desk calendar, and likewise to Merck & Co., for a memorandum calendar, and for a Pompeian calendar to Digestive Ferments Company.

E. R. Squibb & Sons have issued a card list of changes in U. S. P. X, and Smith, Kline & French Co. report the changes, with some detailed information thereto, in a booklet. Receipt of copies are acknowledged.

THE PHARMACIST AND THE LAW.

HOUSE BILL PROVIDES FOR A BUREAU OF MEDICAL RESEARCH.

Establishment of a bureau of medical research is provided in a bill by Representative Woodruff, of Michigan. The bureau would be under the Interior Department, would have a director at $15,000 annual salary, an assistant director at $10,000, and a visiting committee of five members prominent in medical or scientific societies and not in government employ. Provision is made for a $1,000,000 building for the bureau and for appropriation of $550,000 for 1927. The Bureau would be charged to investigate the physical, chemical and biological processes underlying the functioning of organs of the human body, and to determine the properties of materials that would be of advantage to medical science.

TITLE OF CHEMIST-PHARMACIST IN ARGENTINE.

It is customary for many pharmacists in Spanish countries to assume the title "Quimico-Farmacéutico" (chemist-pharmacist), in analogy with the Italian form of "Chimico-Farmacista." Recently Dr. J. Maguin, President of the Argentine Chemical Society, launched a prosecution against Don F. W. Huspaur, a pharmacist of Buenos Aires, for the illegal use of an academic degree, *i. e.*, the adoption of the title "chemist." The opinion of the Faculty of Medicine and of the National Department of Health was sought, and both bodies stated that chemistry forms the basis of the pharmacist's studies; further, law No. 4687, by stipulating that chemical and pharmaceutical works must be managed by a chemist or pharmacist holding a diploma, expressly empowers the latter to undertake the functions of a chemist. Finally, evidence was adduced to prove that it was an old-established custom for pharmacists in Buenos Aires and other parts of Argentine to adopt the title of "quimico-farmacéutico," the same as is the case with the use of the designation "physician and surgeon." The Court accepted these views justifying the use of the title "chemist" by pharmacists, and dismissed the charge against Don Huspaur on the grounds that it was devoid of any foundation. This verdict has been received with great satisfaction by Argentine pharmacists, who regarded the instigation of the prosecution as a direct attack on their professional honour and dignity, emanating as it did from the director of the Chemical Institute in the National Department of Health.—*The Chemist & Druggist.*

HEARINGS ON BRITTEN METRIC STANDARDS BILL.

Hearings on Britten Metric Standards Bill are being held this month; provisions of the bill are explained on p. 71, January JOURNAL, A. PH. A.

VIRGINIA LEGISLATION.

Secretary A. L. I. Winne of Virginia Pharmaceutical Association has issued a letter of information to Virginia pharmacists relative to State legislation. Hearing was to be held January 27, on the "Cosmetic Tax" introduced by Representative Wright. The tax amounts to 10 per cent, with the possibility that the burden of it will fall on the druggist.

Representative Norris has introduced a bill imposing a flat tax of from $10–$15 on the soda fountain and 10 per cent on soda sales. Secretary Winne states that these measures impose an unjust burden. Relative to the Jones Bill which requires a distinctive label for acids, alkalis, caustics, etc., he states that it is a health protective measure and probably will not be opposed.

ALCOHOL TAX IN CONGRESS.

At the time of this writing the result as to the tax on alcohol has not been determined. On January 19 the Senate Finance Committee by a vote of 9 to 8 struck out the provision of the House Bill reducing the alcohol tax from $2.20 to $1.65, January 1, 1927, and to $1.10 per proof gallon, January 1, 1928. The effect of the Senate Bill will be to retain the present tax of $2.20 per proof gallon.

February 11. The Senate Committee receded from its position and accepted the House rate of $1.10.

U. S. P. AND N. F. RECOGNIZED.

Federal prohibition administrators are advised by L. C. Andrews, Assistant Secretary of the Treasury, regarding the permit status of the U. S. P. and N. F. preparations:

In view of the changes in U. S. P. X, effective January 1, and also in the fifth edition of the National Formulary, which will be issued some time during 1926, all preparations which are official in either U. S. P. IX or X, and N. F. IV or N. F. V, should be recognized for permit purposes until such time as permits are renewed for 1927.

PURE WHISKY ONLY TO BE DISPENSED.

In a general order by Assistant Secretary of the Treasury, L. C. Andrews, to prohibition administrators the belief is expressed that it is possible to clean up pretty thoroughly on the diversion of whisky through its present form of distribution for medicinal use by revoking the permits of all those druggists who are party to its misuse.

He mentioned a plan proposed by Administrator Baird of the Pittsburgh district "to lift simultaneously from every drug store in a given city one pint of its medicinal whisky, then test this whisky for purity and, where he finds the druggist handling split whisky or other than absolutely pure bottled-in-bond whisky, to revoke his permit." Mr. Baird would then publish the names of those druggists handling the genuine whisky "so the public may know where it may be procured for medicinal purposes." When this is done simultaneously throughout the city "it is as fair for one as for another," Mr. Andrews said, "and it occurs to me that in the interest of public health as well as law enforcement, this may well be done. In the larger cities it would have to be done one section at a time for want of men enough to handle it. In all cases the bottle could be returned to the druggist after it had been tested.—Through *Oil, Paint and Drug Reporter.*

CIVIL SERVICE EXAMINATION FOR DRUGGIST.

The United States Civil Service Commission announces an open competitive examination for Druggist in the Sixth Civil Service District, which comprises the states of Ohio, Indiana, and Kentucky. A vacancy in the position of Pharmacist, U. S. Veterans' Bureau, Cleveland, Ohio, $1800 a year, and vacancies in positions requiring similar qualifications, at this or higher or lower salary, as they may occur in the Sixth Civil Service District, will be filled from this examination, unless it is found to be in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

Receipts of applications will close March 3; the places for examination follow:

Ohio.—Ashtabula, Athens, Canton, Chillicothe, Cincinnati, Cleveland, Columbus, Dayton, East Liverpool, Ironton, Lima, Mansfield, Marietta, Portsmouth, Sandusky, Toledo, Youngstown, Zanesville.

Indiana.—Angola, Bloomington, Evansville, Fort Wayne, Hammond, Indianapolis, Jeffersonville, LaFayette, Marion, Muncie, Richmond, South Bend, Terre Haute, Valparaiso, Vincennes.

Kentucky.—Ashland, Bowling Green, Covington, Henderson, Hopkinsville, Lexington, London, Louisville, Middlesboro, Owensboro, Paducah, Somerset, U. S. Veterans' Hospital No. 79, Outwood.

BOOK NOTICES AND REVIEWS.

Physiological and Clinical Chemistry. By William A. Pearson, Ph.C., M.D., Professor of Chemistry, Physiological Chemistry and Toxicology in Hahnemann Medical College of Philadelphia; and Joseph S. Hepburn, B.S., Ph.D., Associate Professor of Chemistry in Hahnemann Medical College of Philadelphia. Lea & Febiger (1925), 306 pages. Price $4.00.

This book is intended primarily as a laboratory guide for medical students in physiological and clinical chemistry. It presupposes a knowledge of general chemistry and qualitative analysis, as well as some acquaintance with organic chemistry.

The book is divided into two sections. The first part deals with organic chemistry and the composition of the various body tissues and food stuffs. The second part covers the chemical examination of various secretions of the body for diagnostic purposes, such as those of the salivary glands, stomach, kidney, etc., and the various chemical examinations of the blood which are used in clinical medicine; there are special chapters on the examination of milk and water.

The general plan of the first portion of the book is to give a brief statement of the facts concerning composition and properties of the various compounds treated, followed by directions for experiments which the student is supposed to apply as illustrative of the facts quoted. While the book is small and considerable space is occupied in the description of these experiments, a remarkable amount of general information is condensed into the text.

The second part is not intended as a handbook of medical diagnosis. It does not give, for example, all the tests for glucose in the

urine, but those which the authors believe most valuable. The presentation of the subject is in a manner which is practically serviceable to the neophyte in clinical chemistry.

Although the book is intended primarily for medical students, those pharmacists who have wider interests than the bare requirements of the store will find the book a valuable handy reference for giving a concept of the meaning of such terms as "amino-acids," "split proteins," "monosaccharids," and similar terms, which are being frequently met in physiological and chemical literature. In addition the book furnishes formulas for a number of important reagents used in clinical and physiological chemistry which the pharmacist may be called upon to compound. The value of the book as a reference book we believe would be improved if a different form of type had been used for describing the experiments and if the index were made a little more elaborate.

The book is interleaved for notations by students and others using the book.

H. C. Wood.

Recent Advances in Physiology. By C. Lovatt Evans, Prof. of Physiology, at St. Bartholomew's Medical College, University of London. Published by P. Blakiston's Son and Co., Philadelphia. 360 pages. Price $3.50.

According to the author, this little book may be called an "elementary test-book of advanced physiology;" its aim being to serve as a bridge between the ordinary texts and the mass of current physiological literature. Writing with a style so often possessed by the educated Englishman, Professor Evans succeeds admirably in accomplishing this object. Evidently, the physiology of the circulation attracts him especially; nearly half of the book is devoted to a consideration of this phase of the subject, emphasis being placed particularly on the chemical rather than the physical phenomena. As would be expected from the important contributions to the physiology of muscular contraction which have been made by contemporary English investigators, the author gives considerable space for a consideration of this. Separated from the chapters on muscular contraction by a brief discussion of the endocrin glands, there follows a discussion of the views regarding muscular tonus; finally, there is a section on the physiology of the conditioned reflexes.

If any adverse criticism is justifiable, it is on the ground of the omission of portions of the subject; the author forestalls this, however, by the intimation that he felt better qualified to discuss the parts to which he confined himself.

C. C. H.

Elements of Chemistry, by William Foster, Ph.D., Prof. of Chemistry Princeton University. Pp. XVIII + 576. D. Van Nostrand Co., N. Y., 1925. Price $2.00.

This volume represents one of the many volumes on Elementary Chemistry introduced within the past year. Each text, despite the anticipated elementary character, nevertheless tends to aggravate the existant plethora of "*acute electronitis!*" It appears that writers pack their texts to fullest capacity with data and topics of no material value to the student commencing the study of chemistry.

Foster's volume devotes considerable space to the work of Laue, Rutherford, Mosely, Bohr, Lewis, Langmuir, the Braggs, and others, in the realm of pure physics, at the expense of other monographs in the text. For example, the treatment of individual elements, together with their compounds, is notably brief, only one or two compounds being described for the majority of the respective elements.

The writer states on p. 149 that hydrogen molecules sustain 9,520,000,000 collisions per second with other similar molecules in the same aggregate of the gas. No inkling is afforded as to the validity of such conclusion or even the principles of the method whereby the value was ascertained.

As to the commendably presented Electron Theory, which is a purely physical conception, Foster makes no allusion concerning the fundamental hypotheses whereby the mass of the electron can be estimated. He states this mass to be about 1/1850 that of the hydrogen ion in electrolysis. If the underlying principles are too complicated for the beginner in chemistry, then why even mention the elaborations of these principles in an elementary text?

The book, on the other hand, possesses innumerable redeeming features. Each chapter is concluded with summary, exercises and references for collateral reading, and is abundantly illustrated with cuts and halftones. The treatment of colloid chemistry, spectrum analysis, and principles of metallurgy, are exceptionally well written.

Discussion of the elementary theories of

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chemistry, as well as their application in agriculture and the industries, reflect the work of a master, but the other portions of the text present too great a variety in brief, to correspond with the title of the work.

SIMON MENDELSOHN.

Schlickum's Ausbildung des Jungen Pharmazeuten. 13 Auflage unter Redaction von Prof. Dr. W. Böttger. Mit. 601 Abbildungen, 3 farbigen Tafeln. Lex. 959 pp. M. 33. Johann Ambrosius Barth, Leipzig.

When Oskar Schlickum (1838–1889), Apotheker in Winningen a. M. in 1877 published the first edition of his "Ausbildung des Apothekerlehrlings," the book at once was a success. This being the 13th edition, speaks for a well-deserved popularity. Beginning with the 11th edition the work was broadened so as not only to be a textbook for the apprentice, its original aim, but also for the young pharmacist. The work is so well classified and written that every student in German speaking countries reads and studies or reviews from "Schlickum."

The division of the book is as follows:

I. Physics pp. 1–164, written by Hof-Apotheker Dr. W. Arnold in Munich and L. Schiller, Assistant at the Physical Institute, University of Leipzig.

II. Chemistry pp. 165–503, prepared by Apothekenbesitzer Dr. C. Jehn in Geseke, Apotheker Dr. W. Böttger, Professor University of Leipzig, Oberstabsapotheker Dr. Telle in Leipzig and Dr. H. Trunkel, in Leipzig.

III. Botany pp. 504–646.

IV. Pharmacognosy pp. 647–754. Both chapters are prepared by Apothekenbesitzer L. R. Schlickum in Winnigen, a descendant of the original author.

V. Pharmacy and Jurisprudence pp. 755–851, prepared by Apothekenbesitzer A. Roderfeld in Ludwigsdorf, Dr. H. Telle and Dr. H. Trunkel, Leipzig.

VI. Tables for the Review of Chemistry and Pharmacognosy.

a. Inorganic Chemical—Pharmaceutical Preparations pp. 852–879, by Dr. H. Telle.

b. Organic Chemical Preparations pp. 880–905, prepared by Apotheker H. Bauer, Professor at the Technical High School, Stuttgart.

c. Vegetable Drugs pp. 906–926.

d. Animal Drugs pp. 927–928. Both chapters by Apotheker L. R. Schlickum. Chapter VI is an entirely separate part of the book, so it can be carried and studied by the young pharmacist without interference with the big volume, a novel feature in pharmaceutical bookmaking.

An index in three columns occupies 31 pages, a splendid testimonial on the contents of the book. The two colored plates represent poisonous medicinal plants and are real works of art.

This book, in its 13th edition, is a distinct contribution to pharmacy. It is one of the few books where the student will find everything necessary to the study of pharmacy in one single volume.

OTTO RAUBENHEIMER, PH.M.

INAUGURAL DISSERTATIONS.

Contributions to the Research of the Active Constituents of Cape Aloes. By Hans Kiefer, Apothecary at Basel. One of the purposes of the dissertation is the acquisition of the Doctor's degree. Thanks are extended to members of the Faculty of Pharmacy—Prof. Dr. H. Zörnig and Dr. P. Casparis. Among the references cited is the foregoing dissertation, the method of C. H. Briggs for the estimation of aloin in aloes, p. 774 of September JOUR. A. PH. A., 1923, and reinvestigation of the proximate composition of *Rhamnus frangula*, by John A. Gunton and Dr. George D. Beal, September JOUR. A. PH. A., 1923, pp. 669–682.

Pharmaco-chemical and Physiologic Investigation of the Bark of Frangula is the subject of Apothecary Rudolf Maeder of St. Gallen. Thanks are given the same members of the Faculty. The dissertation makes a book of more pages than the others and more references are given in which those mentioned in the preceding dissertation are included. The candidate for the degree names "glucofrangulin" = frangulin plus glucose = $C_{27}H_{30}O_{14}H_2O$ as the principal active constituent.

The last one of the dissertations is by Apothecary Karl Schulte at Ohle in Westphalia. Special thanks are given Prof. Dr. H. Zörnig. The subject of research relates to the *Anatomy of the Seeds of Monocotyledons.* The dissertation concludes with a key for determining the seeds in powder form; twenty illustrations follow—the more important seeds of the drug plants illustrated are colchicum and veratrum.